

Report for the year 1967

Commissioner
of
Public
Health

Western Australia



REPORT of the
Commissioner of Public Health
for the year 1967

Presented to both Houses of Parliament

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The Honourable Graham Charles MacKinnon, M.L.C.,
MINISTER FOR HEALTH



Sir,

I have the honour to submit the Report of the
Department of Public Health for the Year 1967.

WILLIAM SHARP DAVIDSON, M.B., Ch.B., D.P.H.
Commissioner of Public Health.

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CONTENTS



	Page
<i>Report by the Commissioner of Public Health, Dr. W. S. Davidson</i>	7
<i>Supplementary Reports</i> —	
Appendix	
I—Vital Statistics	10
II—Report by Dr. W. Laurie, Director, Public Health Laboratories	11
III—Report by Dr. F. G. B. Edwards, Director of Tuberculosis	31
IV—Report by Dr. R. Allen, Senior Medical Officer of the Epidemiology and Special Services	42
V—Report by Dr. R. Edmonds, Senior Medical Officer, Child Health Ser- vices	45
VI—School Medical Report	55
VII—Report by Mr. E. J. Turnbull, Senior Dental Officer	56
VIII—Report by Miss P. F. Lee, Principal Matron	58
IX—Report by Nurses Registration Board	60
X—Report by Dr. D. D. Letham, Physician in Charge, Occupational Health	63
XI—Report on Technical Information Service and Library by Dr. J. F. Woolcott	69
XII—Report of Physics Branch, State X-ray Laboratory, by Mr. B. E. King	71
XIII—Report on General Sanitation by Chief Inspector, Mr. A. A. Pilbeam	77
XIV—Report on Public Buildings by Senior Inspector, Mr. R. R. Dunstan	83
XV—Morbidity Statistics for 1967—General Hospitals....	84
XVI—Leprosarium—Admissions and Discharges	105
XVII—Incidence and Mortality of Notifiable Diseases	106
XVIII—Stillbirth and Infant Mortality Rates	107
XIX—Stillbirth and Birth Rates	109
XX—Maternal Mortality Statistics....	110
XXI—Meat Inspection	111
XXII—Revenue and Expenditure	112

ANNUAL REPORT, 1967



VITAL STATISTICS

In 1967, full-blood aborigines have for the first time been included in the Statistics. Despite this, Infant Mortality Rate has fallen from 19.3 in 1966 to 17.4 in 1967. The lowest Infant Mortality Rate so far achieved in Western Australia. The Rate fell from 16.3 to 13.5 in the Perth Statistical Division and from 24.1 to 23.5 in the rest of the State. The relatively high rest-of-the-State figure is largely influenced by infant deaths in aborigines and part-aborigines. The combined Infant Mortality and Stillbirth Rates give a figure of 27.57 which in New Zealand and Australia is only bettered by South Australia with a figure of 27.04. South Australia has relatively few aborigines. The birth rate rose slightly to 20.55 and the death rate at 7.73 is the lowest recorded in 1967 for New Zealand and Australia. The Maternal Mortality Rate of 0.11 is the lowest recorded for Western Australia and the lowest in Australia in 1967.

1967 has therefore provided us with a set of flattering figures in the Health field of Vital Statistics, despite the entry into those figures of a community at special risk, namely full-blooded aborigines.

PUBLIC HEALTH LABORATORIES

Dr. Laurie's report again draws attention to the difficulty of working in accommodation inadequate in size and scattered throughout the metropolitan area in a number of widely separated buildings.

The work of the laboratory continues to grow but the size of the staff remains static. This has largely been accomplished by the acquisition of equipment for automation and data processing, all of which will eventually lead up to the eventual computerisation of much of the work of laboratory and hospital. The automated equipment, in addition to providing a rapid and economic method of screening patients, has provided the means of entering into screening surveys of population groups. The Laboratories have played a considerable role in the Busselton Surveys. The value of such surveys and their future role in Preventive Medicine cannot as yet be fully determined. This will become clearer as the results of present surveys and their follow-ups are evaluated.

The reference laboratories in mycobacteria and salmonellae continue with their developmental and research work and of particular interest biologically and epidemiologically is the reference to the prevalence of salmonellae in reptiles.

TUBERCULOSIS CONTROL

The work of this Branch of the Department continues to meet with success in its efforts to reduce the presence of tuberculosis.

In Dr. Edwards's report, both incidence of new cases and deaths from pulmonary tuberculosis show a continuing decline over the years so that the figures for 1967 are the lowest on record. Viz, 15.6 cases notified in 1967 per 100,000 of population and 1.0 deaths per 100,000 population; comparable figures in 1950 were 104.8 and 22.4 respectively.

There were 62,993 persons x-rayed by the Mass X-ray Service and the incidence of pulmonary tuberculosis discovered was 0.19 per 1,000 persons x-rayed. Chest diseases of another nature were brought to light by the x-ray in 280 persons.

A typical disease resistant to the three primary drugs continues to arise, 15 new cases recorded in 1967. It is interesting to note that the drugs Ethionamide and B. 663 used with some success in these atypical mycobacteria are also drugs with which we have had success in treating infections of mycobacteria leprae in the Derby Leprosarium.

EPIDEMIOLOGY AND SPECIAL SERVICES

No case of tetanus, poliomyelitis or diphteria occurred during the year, indicating a well immunised community.

Bowel infections and infective hepatitis were, however, prevalent suggesting that improvements in the methods of food handling are required at all levels, i.e. in factory, in the shop and in the home.

Sabin oral vaccine was introduced during 1967 to replace the Salk injection. It proved a popular method of vaccination and 379,550 doses were given between 1st June and 31st December.

Trachoma control field work continues and 371 cases were treated representing an incidence of 32 per cent, a slight decrease from the 36.2 per cent of the previous year.

Of the notifiable infectious diseases, infantile diarrhoea remains the major killing disease. In 1967, there were 34 deaths from infantile diarrhoea as against only 10 deaths from pulmonary tuberculosis.

CHILD HEALTH

In his report Dr. Edmonds gives considerable attention to the health of the native child. His investigations into cause of death etc., verify the statement made in the 1964 Annual Report, that the higher incidence of infant deaths in the country as compared to the metropolitan area is not a matter associated with a difference in medical care, but is almost entirely due to the larger proportion of aboriginal and part-aboriginal children in country areas.

Education of the native is the only means of reducing this mortality and this education is a long, slow business. It does, however, work if persisted in, but it needs the tenacity and inspiration of such people as the Nursing Sisters working among natives in the Kimberleys and in Allawah Grove to prove that by a system of long persistant training of native mothers and children and a patient understanding of their problems encouraging results do ultimately appear.

OCCUPATIONAL HEALTH

For the past 20 years, this Department has issued repeated warnings about Blue Asbestos dust and the hazards associated with Blue Asbestos Mining. The sincerity of these warnings have not always been properly appreciated and the consequences are shown by the figures in Dr. Letham's report. The Pneumoconiosis Medical Board awarded compensation claims for asbestosis to 8 miners in 1965, 20 in 1966 and 31 in 1967. The 1967 asbestosis claims awarded were 13.3 per cent of the total successful pneumoconiosis claims. This number and percentage will almost certainly increase in the forthcoming years even though the mine is no longer in operation. Dr. Letham expresses a doubt that safe mining of Blue Asbestos can ever be an economic possibility.

Another hazard of considerable importance in the pneumoconiosis field is the operation of mobile sandblasting units. It appears that these units escape from the requirements of the Factories Act and many operate under circumstances dangerous

both to operatives and to the surrounding population. Where possible, control of this is being pursued under the Clean Air Act.

A variety of occupational hazards and the activity of the Occupational Health Division in combating them is contained in Dr. Letham's report.

HOSPITAL MORBIDITY STATISTICS

Tables show little change from previous years.

Number of patients discharged in the Metropolitan hospitals increased from 40,138 in 1966 to 40,701 in 1967. The number of bed days in hospitals decreased from 524,980 to 522,578. This was brought about by a decrease in the average length of stay in hospital from 13.08 days to 12.84 days.

Accident cases increased the bed occupancy from 16.94 per cent of total beds in the metropolitan teaching hospitals in 1966 to 17.92 per cent in 1967. This was almost entirely due to increase in motor vehicle traffic accidents.

Derby Hospital, the only country hospital supplying statistics, has these statistics separated into white patients and aboriginal patients to show the difference in the incidence in disease and length of stay in hospital between the two races.

The above draws attention to some of the major items in the Report but numerous other important activities of the Department are dealt with in the Appendixes.

LEGISLATION 1967

In the 1967 Session, Parliament passed the following amending Acts.

Child Welfare Act Amendment Act (No. 27)

This Act is administered by the Child Welfare Department. A noteworthy amendment was the addition of strong powers requiring the licensing of child minding centres, and providing for regulations to prescribe standards of care, catering, staff and facilities and for inspection.

Chiropodists Act Amendment Act (No. 65)

A right of appeal to a Magistrate was granted where the Board refused an application for registration of a chiropodist.

Clean Air Act Amendment Act (No. 10)

The State Mining Engineer was added to the membership of the Air Pollution Control Council, and an Inspector of Mines to the Scientific Advisory Committee.

Cremation Act Amendment Act (No. 35)

It is no longer required that the permission of the Commissioner of Public Health be obtained before ashes may be removed from a crematorium.

Dentists Act Amendment Act (No. 11)

Provision was made to extend recognition to Canadian and United States qualifications for registration purposes.

Physiotherapists Act Amendment Act (No. 8)

Persons with foreign qualifications not previously recognised are now permitted to teach, undertake research or post graduate study.

Poisons Act Amendment Act (No. 28)

The Act was amended to permit pesticides to be regulated under a set of regulations other than the Poisons Regulations.

W. S. DAVIDSON,
Commission of Public Health.

Appendix I

VITAL STATISTICS FOR WESTERN AUSTRALIA

				1964	1965	1966	1967 (b)
Mean Population	....	Males	....	(a)	(a)	(a)	446,945
Births	....	Females	....	(a)	(a)	(a)	430,052
		Males	....	8,570	8,280	8,800	9,322
		Females	....	8,115	7,906	8,207	8,701
Total	....	....	....	16,685	16,186	17,007	18,023
Birth rate per 1,000 of Mean Population	....	....	....	20.93	19.85	20.31	20.55
Deaths	....	Males	....	3,738	3,715	3,921	3,956
		Females	....	2,691	2,559	2,851	2,823
Total	....	....	....	6,429	6,274	6,772	6,779
Death rate per 1,000 of Mean Population	....	....	....	8.06	7.70	8.09	7.73
Natural increase rate per 1,000 of Mean Population	....	....	....	12.86	12.16	12.22	12.82
Infant Mortality per 1,000 Live Births—							
Perth Statistical Division	....	....	....	16.0	17.1	16.3	13.5
Rest of State	....	....	....	25.2	29.0	24.1	23.5
Whole of State	....	....	....	19.7	21.7	19.3	17.4
Stillbirths—							
Perth Statistical Division	....	....	....	97	110	113	118
Whole of State	....	....	....	170	181	168	188
Stillbirths rate per 1,000 Total Births	....	....	....	10.09	11.06	9.78	10.32

(a) Not available for publication.

(b) For 1966 and earlier years excludes Full-blood Aborigines. In 1967 Aborigines are included.

Appendix II

Public Health Laboratory Service

Dr. W. Laurie, D.S.O., M.D., T.D.D., M.C.P.A., Director, Public Health Laboratory Services.

I. ADMINISTRATION

General

The responsibilities of this department remain unchanged, i.e. to provide a combined hospital and public health laboratory service which is State-wide and to provide a forensic service for the Police Department.

Accommodation

The accommodation problem has not been solved and, with no indication of planning being started for the larger laboratories, we must increasingly depend on numbers of temporary units which now reach a total of six in addition to accommodation being provided in other parts of the city, such as the Virus Laboratory—4 miles away; the Microbiology Laboratory—3 miles away, and the Cytology Laboratory—2 miles away. This makes control of the work increasingly difficult, with the demands on the laboratories catching up faster than the new space provided.

Tours and Conferences

Several important meetings were attended during the year.

In January, Dr. E. M. Mackay-Scollay and Miss D. Jenkyn attended the AANZAS/ASM meeting in Melbourne. Miss Jenkyn then attended a Post-Graduate Course on Cell Culture conducted at the University of Melbourne in January-February.

Dr. Mackay-Scollay was in Canberra in April for the Commonwealth Committee Meeting on Laboratory Methods in Tuberculosis and later proceeded to Brisbane, the Solomon Islands and Fiji for World Health Organization meetings on Mycobacteria and Tuberculosis Research.

Dr. D. Hainsworth attended the Conference on Aviation Pathology held in May by the Department of Civil Aviation in Melbourne.

In August, Drs. Mackay-Scollay, V. Blackman and D. W. G. Kennett attended the College of Pathologists' Meeting in Brisbane, where Dr. Mackay-Scollay and Dr. Kennett were accepted as members of the College. Dr. Mackay-Scollay then attended a Committee Meeting on Microbiology Teaching and Dr. Blackman and Dr. Kennett attended the Bone Tumour Seminar at which Dr. Dahlin of the Mayo Clinic was the guest speaker—both meetings having been arranged by the College of Pathologists.

On his return journey Dr. Blackman took the opportunity to visit Laboratories in Sydney, Melbourne and Adelaide.

Dr. Mackay-Scollay made a trip to Sydney in September to attend a meeting of the Standards Association of Australia (Microbiological Examination of Dairy Products).

During the year Mr. A. F. Drummond, our Principal Technologist, was on long service leave overseas. During his leave he visited laboratories in Singapore, Kuala Lumpur, New Delhi, Vienna and Hong Kong.

Working Hours

The hours of work still remain 14 hours a day, 7 days a week, in addition to which staff are on call for emergencies after duty. This arrangement is unsatisfactory, not only does it represent a heavy demand on laboratory staff who sometimes are called up for several hours during the night but also possibly is false economy in the sense that it leads to large overtime bills, whereas a small extra number of staff could probably provide a 24-hour service at a cheaper rate and with less demands on the individual.

Character of Work

There has been no significant change in the pattern of the work except that certain departments have increased their work output compared with others, for example the emphasis now seems to be on biochemistry.

Demands on Individual Laboratories

As is the case with laboratories practically the world over, the work continues to increase although in a patchy fashion, some subsections being more heavily involved than others. Details of this are shown in subsequent sections of the report. Work is being increasingly automated or, rather, the methods of carrying out the work are being increasingly automated, the idea being not only to save the patient being venipunctured on several occasions but also to cut down the cost of individual units by the use of screening methods although the cost of this is still to be worked out.

Laboratory Costs

With the increasing demand on each laboratory section and with ready use of automation the laboratory costs for individual units of work continue to fall in spite of the increasing costs otherwise.

II. STAFF

1. *Changes (including Branch Laboratories)*

Position		Recruited	Resigned
Assistant Virologist ....	....	1	....
Technologists ....	....	8	7
Laboratory Assistants ....	....	1	....
Cadet Technologists ....	....	6	1
Laboratory Attendants ....	....	62	59
Animal House Attendants ....	....	3	3
Clerks ....	....	5	4
Typists ....	....	3	2
Storemen ....	....	4	2

The above table shows staff changes for 1967. As is seen, with the exception of cadet technologists recruited for the new 3-year training course, there is no significant increase in staff in spite of the quite substantial increase in work. This has thrown added strain on the staff although automation to some extent has relieved the problem. The position is further worsened by the very large turnover of staff especially among laboratory attendants, in which there was almost a 50 per cent turnover, and since these people are responsible for certain fragmented laboratory investigations the continued training of new individuals is an extra demand on the trained staff.

2. *Sickness*

The staff sickness rate decreased to 1.69 per cent of 49,400 man days worked in 1967 : this is a decrease of 10.1 per cent below the figure of 1.88 per cent lost in 1966.

From the breakdown table below it will be seen that the loss was once more disproportionately high among laboratory attendants who, although 49 per cent. of the work force, were responsible for 73 per cent of the time lost : again, within this group a few individuals made up a substantial total of the time lost, with four attendants being responsible for 115 working days lost.

Sickness Analysis—

Medical staff who make up 5% of the work force, accounted for 0.4% of the recorded working days lost					
Senior Technologists	12.5%	„	„	1.3%	„
Technologists	10%	„	„	8%	„
Clerical Staff	9.5%	„	„	9.5%	„
Laboratory Assistants	7.5%	„	„	6.4%	„
Laboratory Attendants	49%	„	„	73.6%	„
Cadet Technologists	6.5%	„	„	0.8%	„

3. Training

The world-wide shortage of medical laboratory technologists continues as is to be expected in view of the increasing demands on laboratories the world over. This to some extent may be overcome in Perth in the fairly near future by the introduction of the 3-year training course at the Western Australian Institute of Technology, this course replacing the much longer part-time evening course which until recently was the only method of training. We now have a total of 16 cadets attending this course, some in the first year of training, some in the second year of training. During their long vacation these individuals receive practical work in the laboratory and come into contact with hospital problems during that time. It should be noted that of the four sections of medical laboratory technology in the Western Australian Institute of Laboratory Technology three are under the charge of senior technologists originally from this Department. This is an indication of the high standing in which these men are held and, although a serious loss to us, is possibly an investment. Certain of the technologists who have resigned have done so either to open privately run laboratories or to join privately run laboratories, some of which are not under the charge of pathologists.

III. WORK DONE, 1967

1. General

The series of tables in the Appendix gives detailed information of work done in the various sections of the Central Laboratories and in the Branch Laboratories.

Table 1 (a) gives details of the work done in the different sections of the Central Laboratories. The increase in work in the Central Laboratories in 1967 as compared with 1966 is about 16 per cent., much the same as the increase in 1966 over 1965 and, as was the case in 1966, the increase is greater in certain departments than others, with Biochemistry and Histopathology showing an increase of approximately 48 per cent.

The rise in the country work is much less, being only 2.2 per cent. due to substantial falls in two of the large country laboratories.

A new laboratory was opened at Broome in 1967 but so far can only be staffed by a laboratory attendant as no housing is available in Broome for the laboratory technologist authorised for that post. Certain other country centres for which no laboratory services have yet been supplied, for example Quairading, have been provided with a makeshift arrangement whereby railway buses operating through the towns carry refrigerators in which specimens can be forwarded to Perth each day.

The work done by the officers in the branch laboratories again must be commended highly. These officers work very long hours, often seven days a week, and sometimes under extremely uncomfortable conditions.

All branch laboratories have been visited by senior staff during the year, some not as often as is desirable, and with the possibility of increased senior staff this is something which will have to be remedied.

2. Microbiology

The work of this department has been made very difficult by the scattering of laboratories through Perth, which is essential in view of the shortage of space. Much of the time of the Microbiologist-in-Charge is spent in travelling from one laboratory to another, a thoroughly unsatisfactory arrangement.

The volume of the work done during 1967 differed very little from the level attained in the previous year. (See Tables 2 (a) to 2 (h) of the Appendix). As stated administrative difficulties were again encountered due to the fragmentation of the Division exemplified by the continuing existence of four separate and distinct laboratories in the metropolitan area.

During the year plans were prepared for (i) an extension of the existing Animal House on the fifth floor of the Sir Charles Gairdner Hospital : (ii) a separate Media Preparation Unit to be built in Shenton Park, and (iii) a new Animal Breeding Unit. The Animal Breeding Unit was intended to supply laboratory animals firstly for the Public Health Laboratory Service and then, eventually, to enlarge in order to breed animals for all users of laboratory animals in the State. During the year the policy was altered on the score of economy, so that the supply of animals would eventually be taken over by the Animal Health Section of the Department of Agriculture at Jarrah Road, South Perth. This arrangement will require safeguards for the production of laboratory animals as to quantity and quality.

The increasing commitment of the Service for prepared media, both in the country laboratories and in the Sir Charles Gairdner Hospital, required that new accommodation for the preparation of media be found as a matter of urgency. It was envisaged that the Unit would be able to supply bacteriological and virological media, not only for the Service but for any metropolitan hospitals wishing to purchase ready-prepared media.

Clinical Bacteriology

The work in this section is illustrated in Table 2(a). Although the work did not increase overall, there was a rise in examinations of blood and C.S.F. specimens for culture, in the number of sputa examinations and in the sensitivity tests performed on microorganisms isolated. During the year a strain of *Corynebacterium* was isolated on ten separate occasions from the blood of bacterial endocarditis cases. The strain has been submitted to authorities in England but at the time of this report no final diagnosis has been achieved and it seems likely that the strain is a new species entirely.

Enterobacteriaceae Laboratory

The work in this laboratory (see Table 2(c)) was extended into new developmental work on media, designed to facilitate the isolation of *Salmonellae* from both clinical and food materials, and during the year extensive work was undertaken in efforts to trace the origin of *Salmonella*, particularly *Salmonella typhimurium* isolated from small goods.

Three papers are about to be published embracing the work of this section, the first of which deals with the isolation of *Salmonellae* from reptiles, the gravimen of which implicates reptiles as an important reservoir for *Salmonellae* in Australia.

The specific *Salmonella* serotypes isolated during the year have been the subject of a separate publication, which also contained a list of the Arizona strains isolated in the laboratory. It is noteworthy that Arizona strains are assuming greater importance than was previously suspected in Western Australia.

Parasitology

The work in this section is recorded in Table 2(g).

Waters and Sewage

The work of this section is recorded in Table 2(b).

Mycoplasmas

The work of the Mycoplasma Section continued on its main line of activity in relating the isolation of Mycoplasma species to specific lesions. Work in this section includes survey work in the Royal Australian Naval Training Base at the Leeuwin and the survey of volunteer women for cervical cytology undertaken by the University Department of Gynaecology, King Edward Memorial Hospital.

The isolations of Mycoplasma species from clinical material during 1967 is recorded in Table 2(h).

Mycology

The work of the Mycology Section is reported in Table 2(e). The Dermatomycoses comprised once again the bulk of the work performed in this section during the year. It is note-worthy that there was no decrease in these diseases during the cooler winter months. Approximately 50 per cent. of skin specimens yielded positive results on culture.

Various *Candida spp.* were isolated from pus specimens taken from different sites and lesions. Of 340 isolations the most common species was *C. albicans*. *Aspergillus fumigatus* was isolated from the sputum of five patients and *A. terreus* from the sputum of one other patient. There was a single case of Nocardiosis and one of Cryptococcosis, both from the north of the State.

Virology

Although the overall figures suggest a decline in the number of specimens examined, there was an actual increase in work if the figures for the Busselton Survey for the previous year are subtracted. The work of the Section is recorded in Table 2(f) and the main body of effort was directed to the routine diagnosis of virus diseases. No specific epidemic was encountered during the year, but a survey into the virus etiology of croup in patients admitted to the Princess Margaret Hospital was undertaken. This study is continuing.

Despite repeated complaints to the Commonwealth Serum Laboratories the quality of monkey kidney cells for tissue culture again fell far short of the ideal, with repeated contamination of the tissue by Simian viruses.

Another survey proceeding on a continuing basis was the investigation of the spread of viruses in the Royal Australian Naval Training Base at the Leeuwin but no epidemic of disease occurred during the year.

A number of poliovirus isolations were made but these coincided with the use of Sabin vaccine, and the first few strains tested for their origin confirmed them as being vaccine strains.

Mycobacteria

The work of the Mycobacteria Section was re-organised and streamlined during the course of the year in preparation for more extensive work into the classification and pathogenicity of atypical Mycobacteria. An extension to the range of drugs used in sensitivity testing for Mycobacterial strains was also made.

The epidemiological and ecological investigation into human and animal infections by Battey bacilli continued through the year.

Table 2(d) shows the isolations of atypical Mycobacteria during 1967 for comparison purposes with the previous years.

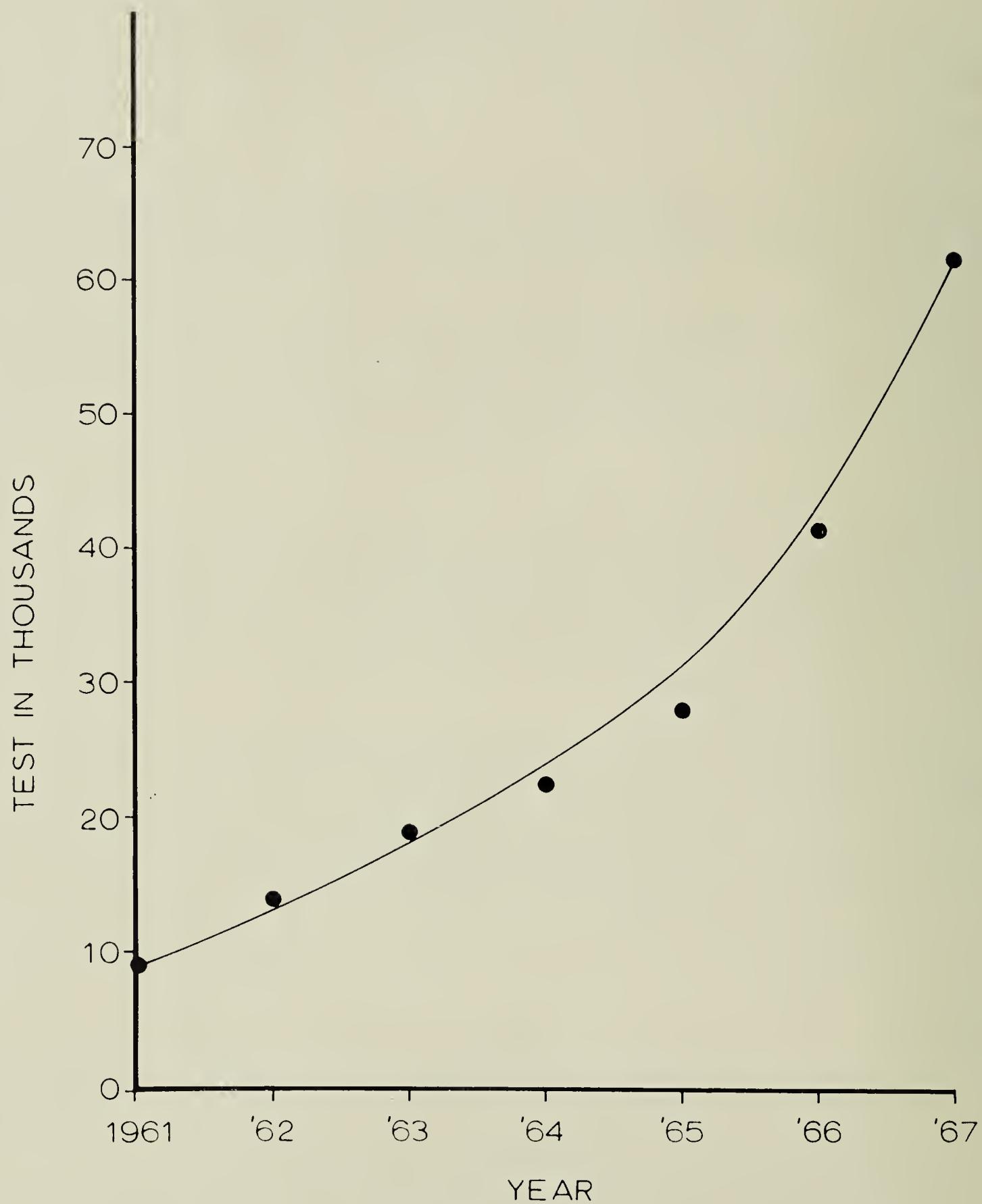
Among visitors to the Laboratories during 1967 was Sir Macfarlane Burnet who had been engaged by the Western Australian Branch of the Australian Society for Microbiology to address them on trends in medical immunology.

3. *Biochemistry*

The year's work is summarised in Table 3(b) of the Appendix. Once again there is a dramatic increase in work load—of the order of 50 per cent. in both tests and

BIOCHEMISTRY

INCREASE IN TESTS 1961-67



unit values. As has been found repeatedly elsewhere in biochemistry sections which serve a hospital population, the rate of increase is an ever growing one. The graph at the end of this report sketches the growth in total numbers of tests performed in this section. Table 3(a) also gives most of this information and shows that both in tests and unit values there has been a 50 per cent. increase in six years. In the last two years it has been decided not to include values related to the collection of blood, development work, preparation of reagents etc. This may give the impression of a slower rate of growth recently than has actually occurred. It is considered that the figures given without these additions are more realistic and more easily assessed.

A considerable amount of effort still goes in development work and the preparation of reagents for the main and country laboratories. In order to compare work done in 1966 and 1967 with that done in earlier years, figures including blood collection are shown in parenthesis in Table 3(a).

The staff of this division was again relatively static, though indications were not lacking that several members would shortly be leaving for a variety of reasons. Space was again at a premium. In order to attain greater efficiency both in biochemistry and haematology, it was planned to amalgamate the various biochemical sections in the three huts at present shared by haematology and biochemistry in the grounds of the hospital, and to bring the haematology and blood transfusion sections into closer proximity on the first floor of the hospital.

A good start was made towards the end of the year with automation of frequently requested biochemical techniques and with the provision of more sophisticated equipment. Six channels of automation were put into use, and electrolyte determinations, urea, cholesterol, calcium, uric acid and phosphate analyses were thus automated. Relatively little trouble was experienced. An atomic absorption spectrophotometer was purchased for metal analyses and put into operation. Plans were made and finance obtained for greater degrees of automation in the near future.

Control of precision and accuracy also demanded some of our attention. Values obtained by our service in the Animal Survey of the Australian College of Pathologists were again acceptable. Quality control is a subject to which increasing attention must be paid in the future in order to benefit as much as possible from our automated equipment.

Steps were taken to acquire the beginnings of a data processing unit in order to deal expeditiously with requests and results. It is hoped to automate the entire recording of requests and to facilitate billing procedures and printing of tests results in sections such as biochemistry and haematology etc.

Towards the end of the year the section undertook the biochemical work in a survey of children's health in Busselton, following on a similar survey in adults held previously. This entailed nearly 1,600 glucose, cholesterol, urea, calcium and uric acid analyses, and without automation these would have imposed a considerably greater strain on the staff.

All in all, during the year we feel that preliminary steps were taken to gear the work of the department to growing and modern concepts of biochemistry in an expanding State and hospital situation, and we look forward confidently to a continuation of this work.

4. *Blood Collection*

This service is shown separately, as in the 1966 Annual Report, as the same personnel are employed in the collection of specimens for both Biochemistry and Haematology.

Table 4 of the Appendix shows an increase in work over the 1966 figures.

5. *Haematology*

The work of this department is summarised in Table 5 of the Appendix. This shows a 30.5 per cent. increase in tests and 26 per cent. increase of unit values over the corresponding figures of 1966. The work done for the Sir Charles Gairdner Hospital again accounted for two-thirds of the total and showed an increase of 29 per cent. over that done in the previous year.

In both years the department participated in the Busselton Surveys. In the first of these years some 3,378 blood groupings, both Rh. and ABO, were performed,

and in 1967, 1,635 such groupings, of each sort. There is no apparent increase therefore in blood grouping in 1967 over 1966 but, if survey work is omitted, there would have been an increase of 73 per cent. in both ABO and Rhesus groupings (formerly known as major and minor). The main increases have been, as might be expected, in the estimations of basic parameters—haemoglobin levels, white cell counts, haematocrits, film examinations, etc. A considerably greater amount of screening is done nowadays for Rhesus antibodies.

Again, there were staff difficulties and at times the department was undermanned quite seriously. Agreement was obtained for the appointment of a senior technologist in blood bank work, who would also undertake coagulation studies, and arrangements were put in hand to send this officer to Melbourne in order to study recent advances in these two fields.

Rationalisation of space has led to the amalgamation of the various haematology and blood banking facilities on the first floor of the hospital, where the available space for their work was somewhat increased over that previously used. Biochemistry, as mentioned elsewhere, was transferred in toto to the huts in the hospital grounds.

There is no doubt that a greater degree of automation is essential in this department and a start was made with the provision of a Coulter Counter which handles the routine white cell counting at the moment. Haemoglobins, haematocrits and basic parameters such as M.C.H.C., M.C.V. should be automated, especially in view of the current staff shortages which are not likely to be alleviated for some time. Many techniques—electrophoresis, blood volume, etc., which can be used, are not being systematically performed because of staff difficulties.

6. *Serology*

The work of this laboratory is set out in Table 6 of the Appendix, and shows an increase of 14.6 per cent. over that of 1966.

New Work Undertaken

Following her attendance at a "Post-Graduate Course on Cell Culture" conducted at the University of Melbourne in January-February, the senior technologist prepared the way for chromosome studies to begin at the newly constructed Pyrton Training Centre for mentally retarded children at Bassendean. Children at the Nathaniel Harper Home in Guildford have been studied, followed by selected children at Irrabeena Centre and Claremont Mental Hospital.

The chromosome work so far carried out has been on leucocytes, using a micro-technique. Counts of at least 30 mitoses are done on each patient and at least 5 of these are photographed and karyotyped.

Other new work in Serology was in virus serology when we started doing Rubella H.I. tests towards the end of the year (previously, only Rubella C.F. tests were done). It is hoped that a large number of tests will be undertaken in future using this method, as it supplies very valuable immunological information on pregnant women. Microtitre equipment has been purchased for doing this test and its use may well be extended to other serological viral procedures.

Pregnancy Tests

We have now almost completely abandoned the biological tests for pregnancy. A few female rabbits are still held for occasional Friedman tests but toads are no longer kept. Two immunological pregnancy tests are run in parallel with each urine received, one being a haemagglutination-inhibition test done in tubes (U.C.G. Test) and the other a latex agglutination-inhibition test done on a slide (Gravindex Slide Test). The reagents for these two tests are derived from two different sources.

It is still our practice to carry out pregnancy tests on those urines tested by the U.C.G. test in Branch Laboratories. A comparison has been made of results obtained on 609 specimens and details of discrepancies are as follows:—

No. of Patients	Central Laboratory		Result
	Results (More than one test) U.C.G.	Other Test	
9	Negative	Negative	Positive
3	Positive	Positive	Negative
3	Positive	Negative	Negative
	(later all these tests became negative)		
1	Positive	Negative	Negative
	(later all tests became positive)		

Survey

The sera collected in the Busselton survey were tested for Hydatid and Mycoplasma pneumoniae antibodies. This completed the work started in 1966.

7. Departments of Morbid Anatomy and Cytology

Tables 7(a) and 7(b) of the Appendix show details of the work done in 1967. The usual steady increase in biopsy work was manifest during the year—15 per cent. greater than in 1966, which itself was 9 per cent. greater than in 1965. The material from the Sir Charles Gairdner Hospital hardly increased, and that from the Commonwealth declined, chiefly due to the appointment of a pathologist at Kalgoorlie and the diversion of Repatriation material to private pathologists, but there was a steady increase of material from State hospitals which more than offset this decline. Forensic autopsies again showed a considerable increase in numbers with the growth of a re-organised forensic pathology section, and more hospital autopsies were performed not only for the Sir Charles Gairdner Hospital but also for various other hospital units in Perth and elsewhere.

The Cytology Department, after a rather disappointing year in 1966, showed an upward trend in its work. Both lung cytology and cervical cytology had an impressive rate of growth.

Morbid Anatomy

Staff and Working Space—Both these shortages continued through 1967 and the remarks made in 1966 could be used again without any great alteration. Biopsy work, which would require the services of two full-time pathologists if the load accepted elsewhere in this State or the Eastern States in similar institutions is accepted as normal, is shared by often two or at most three pathologists who are considerably employed in other departments most of their time—one member of the staff supervises haematology and the Director, besides administration, is responsible for much of the cytology and some forensic work. Technological staff was again in short supply and frequent changes were made—again not making for efficiency. At long last the problem of air conditioning was settled in the hut used for histology, but no extra space was available. The mortuary of the hospital is small (one table), with cramped changing quarters and no provision for spectators. When three or more autopsies are to be done in a day, especially if the University team is interested, a considerable amount of unnecessary waiting occurs.

Equipment—A sledge microtome, better processing equipment and an automatic knife sharpener were ordered. Post-mortem equipment for country laboratories was distributed.

Scope of Work—The weekly clinico-pathological conferences were continued with great success and have proved continuously popular. One week per month the University Department of Pathology has now accepted responsibility for these but the Public Health Laboratory Service provides the material for the other weeks of the month. The heart studies conducted by the Director have continued throughout the year.

Forensic Pathology

It was decided that the District Medical Officer should restrict himself to road deaths, and the Forensic Pathologist is now responsible for autopsy work of a medico-legal nature in suspected felonies and sudden deaths. As pointed out previously, the number of forensic autopsies continues to increase. More and more medico-legal autopsies at Fremantle are performed by our staff directly in the absence of the Fremantle Police Surgeon.

Occasional demands were met from country districts but, fortunately, no great growth in numbers of such requests was apparent, for the travelling time involved in answering these is often excessive. We are naturally prepared to answer any call in a suspected murder case, but many country practitioners are helpful and prepared to conduct autopsies on suicides and sudden deaths with no indication of foul play.

The Director again supervised the serological work and maintained his liaison with the police, as heretofore.

Cytology

The working area and staff problems associated with this section were worrying during the year. After some deliberation, the cytology laboratory was established on the fifth floor of the hospital near the Animal House, a position not altogether satisfactory to anyone. Cytologists varied in numbers and degree of experience alarmingly during the year and we were finally left with one medical officer and one channel of referral, to the Director. There is every need for stability in this section and the appointment of a cytologist with necessary experience is long overdue. Trouble was also found in keeping our cytology screeners, chiefly because there was no specific salary structure for them and they felt that they could earn more in other occupations.

Despite these difficulties, a satisfactory rate of increase in work was apparent during the year, both in bronchial and uterine cytology. Although only a small fraction of the women at risk are examined by cervical smear at present, it seems that the message is reaching practitioners increasingly, and when one considers the incursions of private pathologists into the field, a much higher number of women must have been examined in 1967 than in 1966.

There were no great accessions of equipment in this section during the year.

IV. BRANCH LABORATORIES

The opening up of the North-West has posed increasing problems for the Laboratory Service with a demand for increased laboratory facilities not only for new townships and new ports but also for the older towns such as Port Hedland. The demands grow faster than can be met at present and this applies also to the Goldfields area with the discovery of large deposits of nickel and other expansion. In several instances our failure to supply laboratory services is dictated by lack of housing, not by lack of equipment or staff, since some staff recruited for stations such as Broome have not been able to proceed there because no housing is available, although caravan accommodation can be provided for the laboratory work. Similarly, other stations have reached saturation point as regards the work they can do with the staff at present

employed there. This applies particularly to Derby where no further staff can be sent because of the poor housing ; it also applies to Albany and to Geraldton, and this saturation having been reached in certain of the large country laboratories necessitates their shunting back work to the hard-pressed Central Laboratory, accounting for the failure to show an increase in the work done during the year and accounting for the small overall increase in the work done in the country laboratories as a whole. The service in these more remote areas with much increased living expenses and very few compensating factors means great difficulty in recruiting individuals to serve in those areas, particularly when housing and laboratory accommodation are poor. In spite of the manifest difficulties under which they work, the senior technologists in charge of the country laboratories do work uncomplainingly and do put in long hours of overtime for which they receive no recompense.

V. RESEARCH

Research is limited to necessary developmental work which it is hoped will find application in routine work later. It is shown for example in the Microbiology Division where developmental research work on Mycobacteria and culture methods has now become standardised into routine work. Similarly, methods of testing for pyelonephritis have become simplified and standardised and have become a practical procedure now in country areas. Other developmental work which has now become routine is the use of the strontium media for the growth of the *Salmonellae* and phage typing for *Salmonella typhimurium*.

In the Biochemistry Division the methods of automation are also now standard and are devoted at present to finding what constitutes a normal level.

VI. PUBLICATIONS

Publications from the Department are necessarily limited by lack of time and lack of staff. Among the few publications in 1967 were the following :

1. "A comparative Trial of Rappaport Enrichment Medium for the Isolation of *Salmonellae* from Faeces" by J. B. Iveson and N. Kovacs, published in the *Journal of Clinical Pathology*, Vol. 20, May 1967.
2. A letter to the Editor of the *Medical Journal of Australia* from Drs. Blackman and Laurie on Medical Laboratory Charges which was published in the issue of August 5, 1967, p. 271.
3. "Toxoplasmosis in the Rottnest Quokka (*Setonix Brachyurus*)" by D. G. A. Gibb, B. A. Kakulas, Dorothy H. Perret and Dorothy J. Jenkyn, published in *The Australian Journal of Experimental Biology and Medical Science*. Vol. XLIV (1966).

VII. TEACHING

Teaching continues at all levels—medical students, nurses, technologists and attendants. Each year a full cytology course is run for laboratory screeners. Assistance is also given to the Western Australian Institute of Technology in certain teaching responsibilities. These add significantly to our work load but are regarded as so important that we do not wish to cut them down.

Periodic lectures in forensic procedures are given to successive schools of Police Cadets.

VIII. SURVEYS

It is now becoming increasingly accepted that health surveys are the responsibility of health departments and this department is becoming more involved in such surveys as, for example, part of the Busselton survey.

IX. ACKNOWLEDGMENTS

We wish to record our appreciation of continued help given by workers both here and overseas in difficult cases. In this connection I would particularly mention the Sloan-Kettering Institute of New York and the Public Health Laboratory, Colindale, England.

I would also like to thank the Laboratory Staff for their efforts which have contributed in such large part to a successful year.

Appendix

Table 1 (a)
PUBLIC HEALTH CENTRAL LABORATORIES—SUMMARY OF WORK DONE, 1967

Source	Total 1967		Total 1966		1967 Increase	
					Tests	Unit Values
	State	C'wealth	S.C.G.H.	Others	Tests	Unit Values
	Tests	Unit Values	Tests	Unit Values	Tests	Unit Values
<i>Microbiology</i>						
A. Clinical Bacteriology	15,116	87,928	4,045	22,556	16,482	86,190
B. Waters and Sewerage	8,946	89,460	...	5,207	...	8,946
C. Enteric Diseases	9,249	142,244	497	33,154	4,742	10,180
D. Mycobacteria	...	...	...	187,991	...	152,193
E. Mycology	9,173	59,497	...	...	...	33,154
F. Virology	36,529	245,903	...	...	...	59,497
<i>Biochemistry</i>	9,218	75,964	3,624	43,136	37,277	36,529
<i>Haematology</i>	18,653	80,270	11,490	43,104	325,704	245,903
<i>Serology</i>	51,421	360,068	4,377	31,397	58,407	46,720
<i>Histopathology</i>	...	...	...	...	232,351	35,260
A. Histopathology and Morbid Anatomy	15,953	323,470	928	13,920	4,563	96,565
B. Cytology	3,533	52,995	2,239	33,585	4,035	60,525
Total	177,791	1,517,799	60,354	380,896	123,380	821,133
					21,697	
						383,222
						230,021
						21,697
						330,640
						2,949,849
						383,222
						2,492,329
						15.9
						18.4

Table 1 (b)
PUBLIC HEALTH BRANCH LABORATORIES—SUMMARY OF WORK DONE, 1967

	Total—1967		Total—1966		Increase—1967	
	Tests	Unit values	Tests	Unit values	Tests	Unit values
Albany	21,246	110,422	30,823	122,020	%	%
Bunbury	40,525	232,121	35,711	225,465	13.5	3.0
Busselton	8,436	40,408	7,280	30,902	15.9	30.8
Carnarvon	8,868	42,977	2,406	29,792	more than 3½ times	44.3
Claremont	9,779	38,815	24,827	99,064	...	...
Derby	15,851	92,720	13,997	76,034	13.2	21.9
Geraldton	21,003	101,247	18,497	92,229	13.5	9.8
Manjimup	10,404	56,081	9,531	42,629	9.2	31.6
Merredin	7,744	43,567	3,738	17,621	107.2	147.2
Narrogin	14,491	82,703	14,812	74,762	...	10.6
Northam	12,553	67,896	17,570	66,019	...	2.8
Port Hedland	8,016	41,475	5,851	36,614	37.0	13.3
Wooroloo	12,993	61,059	9,677	60,453	34.3	1.0
Wyndham	7,644	40,820	5,263	31,400	45.2	30.0
Collie	2,904	14,183				
Margaret River	1,925	8,179				
Total	204,382	1,074,673	199,983	1,005,004	2.2	6.9

Table 2 (a)
CLINICAL BACTERIOLOGY—WORK DONE 1967

	Source				1967 Total	1966 Total	1967 Increase
	State	Common-wealth	Hospital	Others			
Animal Inoculations	12	...	...	...	12	88	%
Blood Specimens	77	83	356	6	522	392	33.2
C.S.F. Specimens	24	9	261	51	345	244	41.4
Faeces Specimens	16	1	43	...	60	1,777	...
Foodstuffs: Fresh	392	2	...	...	394	311	26.7
Tinned or Frozen	85	2	...	...	87	66	31.8
Sensitivity Tests	3,219	545	3,289	400	7,453	7,384	0.9
Serous Effusions	8	20	298	3	329	307	7.2
Sputum	972	672	5,230	131	7,005	4,432	58.1
Swabs all Sources	1,539	257	1,331	216	3,343	9,781	...
Urine Examinations	517	1,046	5,360	595	7,518	6,762	11.2
Vaginal Specimens	843	72	134	...	1,049	996	5.3
Venereal Diseases	3,117	1,333	84	...	4,534	4,601	...
Water	103	1	...	12	116	69	68.1
Others	4,192	2	96	15	4,305	625	Nearly 7 times
Totals—							
Tests	15,116	4,045	16,482	1,429	37,072	37,835	...
Unit Values	87,928	22,556	86,190	8,361	205,035	242,260	...

Table 2(b)
WATER AND SEWERAGE SURVEYS—WORK DONE 1967

	Source				1967 Total	1966 Total	1967 Increase
	State	Common-wealth	Hospital	Others			
Water: A. Drinking	6,208	...	...	...	6,208	6,509	%
B. River, Ocean	2,235	...	...	...	2,235	2,110	5.9
C. Sewerage	485	...	...	...	485	309	57.0
D. Membrane Filters	...	...	...	...	...	188	...
Cool Drinks	18	...	...	...	18	13	38.5
Total:							
Tests	8,946	...	...	...	8,946	9,129	...
Unit Values	89,460	...	...	...	89,460	91,290	...

Table 2 (c)
ENTERIC DISEASES LABORATORY—WORK DONE 1967

	Source				1967 Total	1966 Total	1967 Increase
	State	Common-wealth	Hospital	Others			
Animal Inoculation	7	...	...	...	7	...	%
Blood Specimens	...	...	...	...	...	...	...
Faeces specimens	6,248	417	409	...	7,074	4,103	72·4
Foodstuffs: Fresh	525	...	...	...	525	95	5½ times
Fertilisers	136	...	...	...	136	124	9·7
Sensitivities	738	26	24	...	788	183	more than 4 times
Sputum	...	...	...	...	...	...	...
Others	1,595	54	1	...	1,650	1,127	46·4
Total:							
Tests	9,249	497	434	...	10,180	5,662	79·8
Unit Values	142,244	5,207	4,742	...	152,193	71,873	111·8

Table 2 (d)
TUBERCULOSIS SECTION—EXAMINATIONS IN 1967

Type of Examinations	1967 Total	1966 Total	1967 Increase
<i>Sputum :</i>			%
Direct Smears	37		
Centrifuged Deposits	11,496		
Cultures	11,496		
Direct Guinea Pig inoculations	203	23,232	24,006
<i>Gastric Contents :</i>			
Centrifuged Deposits	293		
Cultures	293	599	526
Direct Guinea Pig inoculations	13		13·9
<i>Laryngeal Swabs :</i>			
Centrifuged Deposits	35		
Cultures	35	74	2
Direct Guinea Pig inoculations	4		37 times
<i>Pleural Fluids :</i>			
Sulas	—		
Centrifuged Deposits	139		
Cultures	139	417	334
Direct Guinea Pig inoculations	139		24·9
<i>Bronchial Lavage :</i>			
Centrifuged Deposits	26		
Cultures	26	52	44
Direct Guinea Pig inoculations	—		18·2
<i>Cerebral Spinal Fluid :</i>			
Direct Smears	—		
Centrifuged Deposits	6		
Cultures	7	20	46
Direct Guinea Pig inoculations	7		...
<i>Urine :</i>			
Direct Smears	—		
Centrifuged Deposits	657		
Cultures	657	1,969	1,758
Direct Guinea Pig inoculations	655		12·0
<i>Miscellaneous :</i>			
Direct Smears	6		
Centrifuged Deposits	2380	4,789	1,953
Cultures	2087		145·2
Direct Guinea Pig inoculations	316		
Smears for M. Leprae	51	28	82·1
Virulence Tests	47	...	...
Sensitivity Tests	893	1,615	...
Confirmation Tests	1,011	1,375	...
Total Examinations	33,154	31,687	4·6
	187,991	184,883	1·7
Improvement Work	5,152	41,260	...

Table 2 (e)
MYCOLOGY—WORK DONE 1967

		Source				1967 Total	1966 Total	1967 Increase
		State	Common-wealth	Hospital	Others			
Collection of Specimens	....	1,003	....	....	....	1,003	859	% 16.8
Sputum								
Swabs	....	3,300	....	....	....	3,330	3,271	0.9
C.S.F. and Other Fluids								
Skin, Hair, etc.	....	2,856	....	....	....	2,856	2,570	11.1
Special Examinations	....	989	....	....	....	989	1,079	....
Cervical and Other Smears	....	....	....	....	....	....	12	....
Animal Inoculations	....	36	....	....	....	36	12	3 times
Mycological Smears	....	21	....	....	....	21	....	....
Sensitivities	....	968	....	....	....	968	779	24.3
Total:								
Tests	....	9,173	....	....	....	9,173	8,582	6.9
Unit Values	....	59,497	....	....	....	59,497	56,946	4.5

Table 2 (f)
VIROLOGY SECTION—WORK DONE 1967

		Source				1967 Total	1966 Total	1967 Increase
		State	Common-wealth	Gairdner Hospital	Others			
Preparation of Inocula	....	3,058	....	....	....	3,058	3,263	% ...
Tissue Culture	....	8,213	....	....	....	8,213	11,702	....
Egg Inoculation	....	715	....	....	....	715	2,271	....
Animal Inoculation	....	7,992	....	....	....	7,992	9,448	....
Neutralisation	....	10,164	....	....	....	10,164	8,676	17.1
Haemadsorption	....	707	....	....	....	707	776	....
Haemagglutination and inhibition	....	2,261	....	....	....	2,261	3,413	....
Sterility Tests	....	2,565	....	....	....	2,565	2,457	4.4
Others	....	854	....	....	....	854	657	30.0
Total:								
Tests	....	36,529	....	....	....	36,529	42,663	....
Unit Values	....	245,903	....	....	....	245,903	312,534	....

Table 2 (g)
PARASITOLOGY RESULTS—IDENTIFIED CENTRAL LABORATORIES

Parasite	No. of Identifications
Ancylostoma duodenale	42
Strongyloides stercoralis	8
Giardia lamblia	50
Trichuris trichiura	58
Hymenolepis nana	51
Echinococcus granulosus	1
Enterobius vermicularis	6
Ascaris lumbricoides	5

Table 2 (h)
MYCOPLASMA spp. ISOLATIONS DURING 1967 FROM CLINICAL MATERIAL

Nature of Specimen	M. hominis I	M. fermentans	M. pharyngis	M. salivarium	M. spp.	Tested	Isolations
I Urogenital							
Cervical	90	4	....	....	16	178	110
Vaginal	104	3	....	....	10	209	117
Urethral	55	1	....	....	6	185	62
Penile	4	....	....	....	....	25	4
Prostate Fl. ....	....	....	....	....	....	3	....
Urine ....	....	....	....	....	....	3	....
II Respiratory							
Sputum	10	....	13	214	23	775	260
Throat Swab ....	....	....	1	22	1	85	24
Nasal Swab ....	....	....	....	2	....	18	2
III Miscellaneous							
Serous fluid ....	....	....	....	1	....	1	1
Pleural fluid ....	....	....	....	2	....	3	2
Synovial fluid ....	....	....	....	....	....	2	....
Mouth Swab ....	....	....	....	....	....	4	....
Gingival swab ....	....	....	....	....	....	1	....
Eye swab ....	....	....	....	....	....	2	....
Wound swab ....	....	....	....	....	....	9	....
Post Mortem ....	....	....	....	....	....	38	....
						(17 Cadavers)	
Totals	263	8	14	241	56	1,541	584

Table 3 (a)
BIOCHEMISTRY—WORK LOAD 1961-1967

Year	No. of Tests	Increase in Year	Units Work done	Increase in year	
				%	%
1961	9,616	....	100,455	....	....
1962	14,472	50.5	137,819	27.9	....
1963	19,257	....	179,333	....	....
1964	22,752	18.1	199,219	11.1	....
1965	28,065	23.4	296,144	48.7	....
1966	35,260	48.7	311,371	46.0	....
	(41,735)		(432,294)		
1967	51,892	47.2	467,201	50.0	....
	(60,967)		(512,576)		

Bracketed figures—tests and units including collections, development work etc.

Table 3 (b)
BIOCHEMISTRY DEPARTMENT—WORK DONE, 1967

Work Done	Source				1967 Total	1966 Total	1967 Increase
	State	Common-wealth	Gairdner Hospital	Others			
Serum/Plasma Tests	8,959	3,487	36,170	1,602	50,218	33,687	49.1
C.S.F. Tests	62	....	237	49	348	337	3.3
Gastric Contents ....	....	....	3	....	3	3	....
Effusions	3	2	155	3	163	54	3 times
Urine Examinations	111	55	433	85	684	811	....
Metabolic Tests	20	8	147	6	181	130	39.2
Others	63	72	132	28	295	238	23.9
Totals—Tests	9,218	3,624	37,277	1,773	51,892	35,260	47.2
Unit Values	75,964	43,136	325,704	22,397	467,201	311,371	50.0

Table 4
BLOOD COLLECTION

		1967		1966	
		Collections		Units	
Biochemistry	....	9,075		45,375	
Haematology	....	13,868		69,340	
Total	....	22,943		114,715	
		Increase in—Collections Units		27.5%	

Table 5
HAEMATOLOGY DEPARTMENT—WORK DONE 1967

Tests Done	Source				1967 Total	1966 Total	1967 Increase
	State	Common-wealth	Gairdner Hospital	Others			
<i>Red Cells—</i>							
Total levels	8	4	3	18	8	125
Haematocrit	859	1,517	6,912	763	8,037	25.1
Absolute Values	850	1,518	6,823	764	9,955	24.3
Sedimentation	401	1,260	5,511	122	7,294	21
Film Examination	2,497	1,579	7,130	666	11,872	44.3
Fragility tests	1	2	6	9	4	125
Reticulocytes	10	79	410	12	511	347
Stipple cells	1	....	....	....	1	....
Hb. levels	2,514	1,520	6,938	784	11,756	8,122
Platelets	340	596	2,482	344	3,762	3,566
<i>White Cells—</i>							
Total	2,361	1,341	6,205	576	10,483	6,861
Differential	2,355	1,320	6,190	513	10,378	6,813
L.E. Cells	37	5	212	20	274	155
Direct Eosinophil count	5	1	149	2	157	148
<i>Blood Grouping—</i>							
Major	2,526	17	959	662	4,164	4,841
Minor	2,526	17	959	662	4,164	4,841
Compatibility	45	3,096	....	3,141	2,580
Rh Antibodies	989	17	961	779	2,746	795
Genotyping	1	....	....	5	6	49
<i>Bone Marrow Examination</i>							
Vit. B12 Assay	8	5	51	6	70	47
<i>Coagulation Tests—</i>							
Prothrombin Time	145	509	2,811	29	3,494	2,809
Bleeding Time	17	5	78	2	102	68
Clotting Time	18	11	191	1	221	68
Clot Retraction	8	1	61	1	71	18
Others	44	34	108	21	207	112
Totals—Tests		18,653	11,490	58,407	6,811	95,361	73,081
Unit Values		80,270	43,104	232,351	29,403	385,128	305,998

Table 6
SEROLOGY DEPARTMENT—WORK DONE 1967

Work Done	Source				1967 Total	1966 Total	1967 Increase
	State	Common-wealth	Gairdner Hospital	Others			
<i>Treponemal Tests</i>							
Gonococcal Tests	2,568	389	22	....	2,979	2,290
Hydatid Tests	159	8	27	....	194	149
Bacterial agglutinations	4,212	304	401	....	4,917	7,040
Rheumatic Tests	2,674	615	403	378	4,070	4,270
Leptospiral Tests	1,027	8	28	....	1,063	2,063
Viral, Rickettsial and Protozoal Tests	8,969	629	1,140	....	10,738	8,769
Hormone Tests	2,229	12	86	1,089	3,416	2,554
Medico-Legal Tests	929	....	....	....	929	2,232
Chromosome Studies	131	....	....	....	131	....
Others	179	1	20	....	200	312
Totals—Tests		51,421	4,377	2,895	1,467	60,160	56,351
Unit Values		360,068	31,397	25,751	16,605	433,821	378,384

Table 7 (a)
HISTOPATHOLOGY AND MORBID ANATOMY—WORK DONE, 1967

Work Done	Source				1967 Total	1966 Total	1967 Increase
	State	Common-wealth	Gairdner Hospital	Others			
<i>Autopsies—</i>							
Forensic	413	...	...	...	413	307	34·5
Others	42	...	152	...	194	131	48·1
<i>Sections—</i>							
Autopsy sp. Forensic	6,409	...	...	...	6,409	3,070	108·8
Autopsy sp. Others	2,968	...	2,417	...	5,385	2,984	80·5
Biopsy specimens	2,445	928	1,972	4,035	9,380	8,170	14·8
Animal Specimens	71	...	...	...	71	237	...
<i>Special Staining—</i>							
Autopsy specimens	929	...	...	...	929	548	69·5
Biopsy specimens	2,533	...	...	...	2,533	1,553	63·1
Frozen Sections	143	...	22	...	165	120	37·5
Total—Examinations	15,953	928	4,563	4,035	25,479	17,120	48·8
Units	323,470	13,920	96,565	60,525	494,480	337,740	46·4

Table 7 (b)
CYTOLOGY—WORK DONE, 1967

Work Done	Source				1967 Total	1966 Total	1967 Increase
	State	Common-wealth	Gairdner Hospital	Others			
Exfoliative Cytology	3,533	2,239	3,322	6,182	15,276	13,270	15·1
Total—Examinations	3,533	2,239	3,322	6,182	15,276	13,270	15·1
Units	52,995	33,585	49,830	92,730	229,140	199,050	15·1
				1967	1966	Increase 1967	
				No. of Cases	No. of Slides	No. of Cases	No. of Slides
Lung Specimens	3,550	4,362	3,002	3,779	18·3	15·4	
Cervical Specimens	2,881	7,912	2,236	6,203	25·7	27·6	
Other Specimens	363	855	263	785	38·0	8·9	
Special Slides	...	2,147	...	2,503	...	...
Total	6,794	15,276	5,501	13,270	23·5	15·1	

Appendix III

Tuberculosis Control Branch

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Director

Total notifications of all kinds of tuberculosis were 171, as compared with 170 in 1966 and 178 in 1965. There were 142 new cases (109 pulmonary and 33 non-pulmonary), as against 134 and 148 for the previous two years. Transfers in from other States accounted for 11 cases ; there were 18 re-notifications, (10% of the total) as compared with 27 (16.7%) and 24 (13.7%) in 1966 and 1965 respectively. Atypical disease showed a slight decline, 15 cases being proven as compared with 19 in the previous year ; the majority were due to M. Battey.

Excluding the usual group of young patients with bacillary negative glandular disease, the incidence in age groups below 25 continues to be low. This age range corresponds with those persons not subject to mass compulsory chest surveys. Peak notifications were in the 40-54 age range.

In summary : although the two years from June 30th, 1965 to June 30th, 1967, has seen a rapid increase in population—61,000, a much greater increase than in any previous similar period in the State's history—the numbers of tuberculosis cases have remained stable.

NOTIFICATIONS TO THE TUBERCULOSIS REGISTER

Form and organism causing disease :—

Form	M. TB. (Human Type)	Proven			Total
		Atypical	Mycobacteria	Runyon Group	
Pulmonary : adult type	123	I	II	III	134
childhood type	1	....	....	....	1
Pleurisy with effusion	2	....	....	....	2
Non-Pulmonary :					
Glands	*18	....	1	3	22
Genitourinary	7	....	....	....	7
Bone and Joint	3	....	....	....	3
Abdominal	2	....	....	....	2

* Comparative skin testing suggested that the majority of these infections were due to atypical mycobacteria, although the organisms could not be isolated in the laboratory.

No cases proven infection due to M. Bovis occurred. One child however developed glandular disease after contact with a highly infected herd. Although sections of these glands showed histological evidence of tuberculosis, mycobacteria could not be cultured from the excised tissue.

SOURCE OF NOTIFICATIONS

Chest Clinics continued to play the most important role in detection, patients with pulmonary disease from this source increasing slightly (by 5%) as compared with the previous year. No significant changes occurred in the proportion of notifications received from other sources.

BACILLARY POSITIVE CASES

Sixty-seven per cent of new cases were proven by isolation and identification of the mycobacteria concerned. Atypical mycobacteria were not accepted as causative unless

there were repeated isolations in the presence of a progressive lesion. The percentages for previous years were :

1961	....	....	....	....	52%
1962	....	....	....	....	60%
1963	....	....	....	....	75%
1964	....	....	....	....	77%
1965	....	....	....	....	75%
1966	....	....	....	....	71%

In 101 cases the organism was identified as *M. tuberculosis hominis*, in one an atypical mycobacterium Group I (*M. Kansasii*) was responsible, in 5 a Scotochromogen (Group II) and in 9 patients *M. Battey* (Group III). No cases of infection in humans due to *M. avium* have yet been reported in this State.

Of the 111 patients from whom *M. tuberculosis* was isolated during the year (that is, including reactivations and relapses), 105 had been admitted to hospital, and six were awaiting admission at the 31st December. Twenty-three patients were still bacillary positive at the latter date and were continuing treatment with anti-tuberculosis drugs. Fifteen patients with progressive disease due to atypical organisms became positive, three only remaining positive at the 31st of December, suggesting improved results of treatment of this type of case.

At the end of the year there were only 5 patients who were classified as having chronic sputum positive disease due to *M. tuberculosis*, the figure for atypical infections being 18.

BACTERIOLOGICAL SENSITIVITY

M. Tuberculosis

Two patients not previously treated with anti-tuberculosis drugs produced organisms resistant to PAS. There were no instances of primary resistance to other drugs. Of the previously treated cases, 7 produced organisms resistant to Streptomycin and there were 9 resistant to PAS and 7 to Isoniazid. Two strains were resistant to both Streptomycin and Isoniazid, and 5 to all three primary drugs.

Atypical Disease

Of the 15 strains causing new disease, all were completely resistant to the 3 primary drugs. Ten were sensitive to Ethionamide, 9 to Ethambutol and 8 to B.663. Thus the combination ethionamide-ethambutol-B.663 theoretically should prove effective in controlling this kind of disease.

REACTIVATIONS

Of the 18 re-notifications (10% of the total) 13 had at the time of their original notification been proved to have active tuberculosis. These, with the possible exception of 1, can be accepted as true reactivated cases.

The following is a comparison with figures for the previous three years :

		Number of Renotifications				Total for 4 Years
		1964	1965	1966	1967	
(a)	Diagnosis not confirmed at time of original notification (not true reactivations)	....	....	....	....	21
(b)	Diagnosis confirmed at time of original notification (true reactivations)					
(1)	Had never received chemotherapy	....	....	....	8	23
(2)	Had received inadequate chemotherapy					
	Without surgery	....	....	....	13	36
	With surgery	....	....	....	5	12
(3)	Had apparently received adequate chemotherapy	....	....	....	2	2
(c)	Other (transferred back to State, etc.)	....	....	....	2	6
		3	1	....	....

Of the 73 patients who had true reactivations between 1964 and 1967, almost all had had their original treatment before 1955. This represents a relapse rate of 6 per 1000 per year in persons with previously documented episodes of tuberculosis who are now resident in the State. It appears that patients who have been adequately treated, even those with advanced lesions, uncommonly relapse. However a further period of observation may be necessary before this can be firmly established.

STATE OF THE CASE REGISTER

The "active" register is summarised in Table 4. These figures are based on the criteria adopted for the Danish Tuberculosis Index, that is, names are removed from the Active Register and placed on the file of previous cases after a bacillary negative period of 3 years following completion of chemotherapy.

Two hundred and fourteen names were removed from the Register during 1967, 122 being transferred to the file of previous cases ; 21 left the State and there were 37 deaths, the majority from causes other than tuberculosis.

FILE OF PREVIOUS CASES

At the 31st of December there were 3,143 names on the file of previous cases, that is persons resident in the State who had had clinically documented episodes of tuberculosis. These patients are subject to regular annual review.

DEATHS

Tuberculosis deaths accounted for 1.0 per 100,000 population. Causes were :

1. Progressive pulmonary disease due to :
 - (a) M. tuberculosis 5 (including one case of terminal miliary disease).
 - (b) M. Battey 1
2. Old healed tuberculosis with extensive fibrosis with or without other conditions 3

MASS COMPULSORY CHEST X-RAY SURVEYS

Surveys were conducted on a compulsory basis for persons of 25 years of age and over, covering the following shires and towns :

Metropolitan :

Peppermint Grove
Cottesloe
Claremont
Mosman Park
Nedlands
Subiaco
Perth (part)

Country :

Three Springs
Mingenew
Irwin
Greenough
Geraldton
Chapman Valley
Northampton
Mullewa

A total of 62,993 persons were X-rayed, as compared with 57,291 in the previous year and 64,025 in 1965. The active Tuberculosis case rate for the 1967 surveys was 0.19 per 1,000 persons X-rayed. It appears that many persons who would formerly

have been diagnosed by mass surveys are now being diagnosed as a result of selective group follow-up through chest clinics.

Other conditions discovered were :

Bronchogenic carcinoma	....	....	....	....	10
Other malignant neoplasms	....	....	....	....	4
Pneumonia and pneumonitis	....	....	....	....	75
Lung cysts	....	....	....	....	2
Bronchiectasis	....	....	....	....	14
Pneumoconiosis (not previously recorded)	....	....	....	....	12
Hamartoma	....	....	....	....	1
Sarcoidosis	....	....	....	....	1
Heart conditions	....	....	....	....	161

PERSONS BORN OUTSIDE AUSTRALIA

Tables 5 and 6 show that the relative incidence in this group as compared with the Australian born has been consistently maintained. It is more than double in both males and females. Persons of Greek and Yugoslav origin showed a particularly high rate, while the British born were at about the average level for those born outside Australia.

British full fare paying passengers contributed 23 cases to the Register ; 2 of these developed active tuberculosis within one year of arrival and 3 from one to five years after arrival.

SURVEY OF NEW ARRIVALS

Leaflets are distributed to new arrivals at disembarkation points through officials of the Immigration Department, requesting attendance for chest x-ray as required under Section 293A of the Health Act. Two reminders are sent to non attenders.

The following figures show that 71.1% actually attended, as compared with 52.4% for the previous year.

		1966	1967
Estimated number of new arrivals	....	18,096	15,673
Attended as a result of pamphlet distribution at disembarkation point	....	2,335	5,065
Attended following first reminder notice	....	6,826	5,486
Attended following second reminder notice	....	313	591
		9,474	11,142
		(52.4%)	(71.1%)

Abnormal findings were :

		1966	1967
Pulmonary tuberculosis, active	....	4	2
Pulmonary tuberculosis, inactive or apparently inactive and brought under clinical supervision	....	61	56
Other chest conditions (excluding minor abnormalities)	....	35	47

TUBERCULIN TESTING AND B.C.G. VACCINATION

As well as the usual procedure of offering vaccination to negative reactors proceeding overseas to countries where tuberculosis incidence is high, and to other risk groups such as medical and nursing personnel and contacts, vaccination was offered to second year secondary school students, 11,730 were tested using the Heaf gun method, 4.85% showing positive reactions (including grade I). The majority of negative reactors accepted B.C.G. vaccination.

DOMICILIARY TREATMENT

The Visiting Sisters paid 1,700 visits during the year to patients receiving drugs on a domiciliary basis. In addition 500 visits were arranged through the Silver Chain Nursing organisation. The latter were undertaken mainly for the purpose of close supervision of patients who were considered to be unreliable drug takers.

80.9% of patients who were receiving domiciliary treatment were recorded by the Visiting Sisters to be reliable drug takers, 8.6% being definitely unreliable and the remaining 10.5% being of doubtful reliability.

The responsibility of the visiting nursing staff in this aspect of tuberculosis control is inevitably increasing.

IDENTIFICATIONS OF ATYPICAL MYCOBACTERIA

In Table 8 is shown those patients from whom atypical mycobacteria were isolated for the first time during 1967. Total figures since 1961 are as follows :

1961	....	....	....	....	112
1962	....	....	....	....	81
1963	....	....	....	....	105
1964	....	....	....	....	105
1965	....	....	....	....	51
1966	....	....	....	....	85
1967	....	....	....	....	75
Total Patients					614

Many isolations were made from sputum specimens from patients with chronic lung diseases such as chronic bronchitis, chronic bronchial asthma with bronchitis, silicosis, bronchiectasis, etc.

Approximately one in six of these patients proved to have progressive disease due to atypical mycobacteria. The latter are listed in Table 10.

Table 1
TUBERCULOSIS—MAIN STATISTICAL FIGURES

Year	Mean Population 1,000s.	Notifications			No. on Register (Pulm.) at 31st Dec.	No. on Register per 100,000 (Pulm.)	Number Receiving T.B. Allowance at 31st Dec.	Deaths			Death Rate per 100,000		
		Pulm. (incl. Pleural effus.)	Non-Pulm.	Total				Pulm.	Non-Pulm.	Total	Pulm.	All Forms	
1950	558	586	18	604	104.8	2,100	376	515	125	3	128	22.4	22.9
1951	580	467	37	504	80.4	2,402	413	474	76	6	82	13.1	14.1
1952	601	508	49	557	84.5	2,574	428	396	75	7	82	12.5	13.6
1953	621	378	34	412	60.6	2,762	445	361	43	3	46	6.9	7.4
1954	640	348	34	382	54.3	2,769	432	326	57	4	61	8.9	9.5
1955	659	413	39	452	62.7	2,965	450	330	31	2	33	4.7	5.0
1956	677	424	44	468	62.6	2,900	428	264	43	3	46	6.3	6.8
1957	692	332	32	364	47.9	2,786	403	198	36	1	37	5.2	5.3
1958	706	355	24	379	50.3	2,726	386	213	22	4	26	3.1	3.4
1959	726	320	34	354	44.1	2,684	369	182	24	....	24	3.3	3.3
1960	731	296	34	330	40.5	2,388	327	148	29	1	30	4.0	4.1
1961	737	209	41	250	28.4	1,349	183	89	18	1	19	2.4	2.6
1962	755	243	25	268	32.2	1,333	177	90	24	4	28	3.2	3.7
1963	773	216	28	244	27.9	1,218	158	92	13	....	13	1.7	1.7
1964	790	176	32	208	22.3	1,221	154	88	20	....	20	2.5	2.5
1965	806	153	25	178	19.0	919	114	65	12	....	12	1.5	1.5
1966	836	134	36	170	16.0	840	100	64	16	....	16	1.9	1.9
1967	877	137	34	171	15.6	814	93	54	9	....	9	1.0	1.0

Table
ANNUAL NOTIFICATIONS OF PULMONARY TUBERCULOSIS SHOWING STAGE OF DISEASE*

Year	Parenchymal Disease						Pleural Effusion	Total
	Minimal		Moderately Advanced		Advanced			
1952	122	%	275	%	101	%	10	508
1953	98	24.0	210	54.1	65	19.9	5	378
1954	96	25.9	178	55.5	74	17.2	....	348
1955	111	27.6	225	51.1	64	21.3	13	413
1956	127	26.9	217	54.5	72	15.5	8	424
1957	102	38.0	163	51.1	61	17.0	6	332
1958	91	30.7	187	49.1	72	18.4	5	355
1959	103	25.6	151	52.7	55	20.3	11	320
1960	89	32.2	144	47.2	49	17.2	14	296
1961	90	30.1	73	48.6	34	16.6	12	209
1962	117	43.1	84	34.9	36	14.3	6	243
1963	99	48.1	89	41.2	26	12.0	2	216
1964	71	45.8	81	46.0	23	13.1	1	176
1965	75	44.0	60	39.2	17	11.1	1	153
1966	59	40.9	54	40.3	18	13.4	3	134
1967	56	40.9	59	43.1	20	14.6	2	137

* Classified according to Diagnostic Standards N.T.A.

Table 3
TUBERCULOSIS NOTIFICATIONS FOR THE YEAR ENDED 31st DECEMBER 967
Showing Age, Sex, Form and Stage of Disease

Group	Males				Females				Persons				Total			
	Pulmonary			Non-Pulm.	Pleur. Effus.	Pulmonary			Non-Pulm.	Pleur. Effus.	Pulmonary					
	Min.	Mod.	Adv.			Min.	Mod.	Adv.			Min.	Mod.	Adv.			
0-4	...	...	...	2	...	1*	...	...	6	...	1*	...	...	8	...	9
5-9	...	...	...	1	...	...	...	...	4	...	...	...	...	5	...	5
10-14	...	...	...	...	...	1	...	...	...	...	1	...	...	5	...	1
15-19	2	...	...	...	...	1	...	...	...	...	2	1	...	...	...	3
20-24	1	...	...	...	1	...	...	...	...	...	1	...	...	1	...	2
25-29	3	1	...	...	...	1	1	...	5	...	4	2	...	5	...	11
30-34	3	5	1	1	...	2	1	...	...	...	5	6	1	1	...	13
35-39	3	4	...	3	...	1	1	...	1	...	4	5	...	4	...	13
40-44	7	3	2	2	...	...	2	...	1	...	7	5	2	3	...	13
45-49	4	4	2	1	...	1	...	...	1	...	5	4	2	2	...	17
50-54	9	4	4	1	...	...	...	...	1	...	9	4	4	1	...	13
55-59	7	8	1	...	...	1	...	...	1	...	7	9	1	1	...	18
60-64	5	7	2	...	1	...	1	...	1	...	5	8	2	1	1	17
65-69	3	4	1	...	...	...	...	...	2	...	3	4	1	2	...	10
70-74	1	4	2	1	...	...	...	...	...	...	1	4	2	1	...	8
75-	1	4	3	...	...	1	2	2	...	...	2	6	5	...	...	13
Total	49	48	18	12	2	7	11	2	22	...	56	59	20	34	2	171

* Primary

Table 4
ANALYSIS OF REGISTER AS AT 31st DECEMBER, 1967
A. Pulmonary Tuberculosis
(excluding Pleural Effusions)

Activity	Number on Register according to original extent of lesions			Total
	Minimal	Moderate	Advanced	
Active	100	86	24	210
Inactive—				
0-1 year	36	38	11	85
1-2 year	31	34	10	75
2-3 years	58	54	12	124
3-4 years	68	58	18	144
4-5 years	70	44	17	131
5+ years	17	14	5	36
Total	380	328	97	805
B. Pleural Effusion	...	...	9	
C. Non-Pulmonary Tuberculosis	...	...	149	
Total (all forms)	...	...	963	

Table 5
WESTERN AUSTRALIA : TUBERCULOSIS INCIDENCE BY COUNTRY OF BIRTH, 1961-1967 : MALES

Country of Birth	Population at June 30, 1966 Thousands (Census)	Incidence per Thousand Persons							Total Notifica- tions, 1961-1967
		1961	1962	1963	1964	1965	1966	1967	
United Kingdom and Republic of Ireland	54.9	0.92	0.93	0.66	0.67	0.61	0.59	0.53	223
Germany	2.9	0.74	0.37	....	....	0.75	....	....	5
Greece	3.1	0.87	0.87	0.43	....	....	....	0.65	7
Italy	16.0	1.01	0.91	0.70	0.60	0.47	0.20	0.50	67
Netherlands	5.8	0.16	0.64	0.31	....	0.16	0.16	0.17	10
Poland	2.8	2.50	0.33	1.85	1.07	....	0.71	1.43	22
Yugoslavia	4.6	1.39	1.08	1.58	1.11	1.11	1.94	0.43	32
Other European	6.5	1.40	1.05	0.70	1.05	0.70	1.40	1.08	43
Other Birthplaces	11.8	0.86	1.09	1.19	0.74	1.23	0.61	0.68	55
Total non-Australian born	108.4	0.97	0.89	0.74	0.64	0.58	0.59	0.56	464
Australian-born*	318.2	0.30	0.37	0.34	0.31	0.22	0.26	0.20	602

* Full-blood aborigines excluded.

Table 6
WESTERN AUSTRALIA : TUBERCULOSIS INCIDENCE BY COUNTRY OF BIRTH, 1961-1967 : FEMALES

Country of Birth	Population at June 30, 1966 Thousands (Census)	Incidence per Thousand Persons							Total Notifica- tions, 1961-1967
		1961	1962	1963	1964	1965	1966	1967	
United Kingdom and Republic of Ireland	49.2	0.23	0.29	0.31	0.26	0.36	0.15	0.18	71
Germany	3.0	0.34	....	0.34	....	0.34	....	....	3
Greece	2.3	0.55	0.52	0.50	1.11	....	....	0.43	6
Italy	12.1	0.68	0.27	0.26	0.09	0.58	0.29	0.08	24
Netherlands	4.6	....	0.39	....	....	....	....	....	2
Poland	2.0	0.53	0.56	....	2.10	....	....	....	6
Yugoslavia	2.9	....	1.67	1.60	....	0.43	....	0.34	10
Other European	4.4	0.75	0.73	....	0.25	0.75	0.75	0.68	16
Other Birthplaces	9.8	0.45	0.29	0.14	0.45	0.15	0.15	0.20	13
Total non-Australian born	90.3	0.34	0.36	0.29	0.28	0.34	0.19	0.19	151
Australian-born*	319.7	0.16	0.16	0.13	0.14	0.12	0.09	0.08	256

* Full-blood aborigines excluded

Table 7
NOTIFICATIONS OF BRITISH FULL-FARE PAYING PASSENGERS

Year of Notification	Persons Notified				Total
	Within One Year of Arrival	One to Five Years after Arrival	Five to Ten Years after Arrival	More than Ten Years after Arrival	
1958	1	6	3	59	69
1959	4	1	6	32	43
1960	1	1	4	44	50
1961	2	2	3	35	42
1962	2	2	1	24	29
1963	2	....	1	13	16
1964	3	2	1	13	19
1965	3	1	1	8	13
1966	....	2	2	12	16
1967	2	3	1	17	23
Total	20	20	23	257	320

Table 8

PATIENTS FROM WHOM ATYPICAL MYCOBACTERIA WERE ISOLATED (FOR THE FIRST TIME) IN 1967

Runyon Group	Casual Isolations	Intermittent Isolations	Persistent Isolations				Total	
			Atypical Tuberculosis			Other		
			Pulm.	Non-Pulm.	Total			
1	1	...	1	...	1	...	2	
2	5	1	3	1	4	...	10	
3	*45	9	4	2	6	1	61	
4	2	...	...	...	...	...	2
Total Patients	53	10	8	3	11	1	75	

* Includes 3 Renal

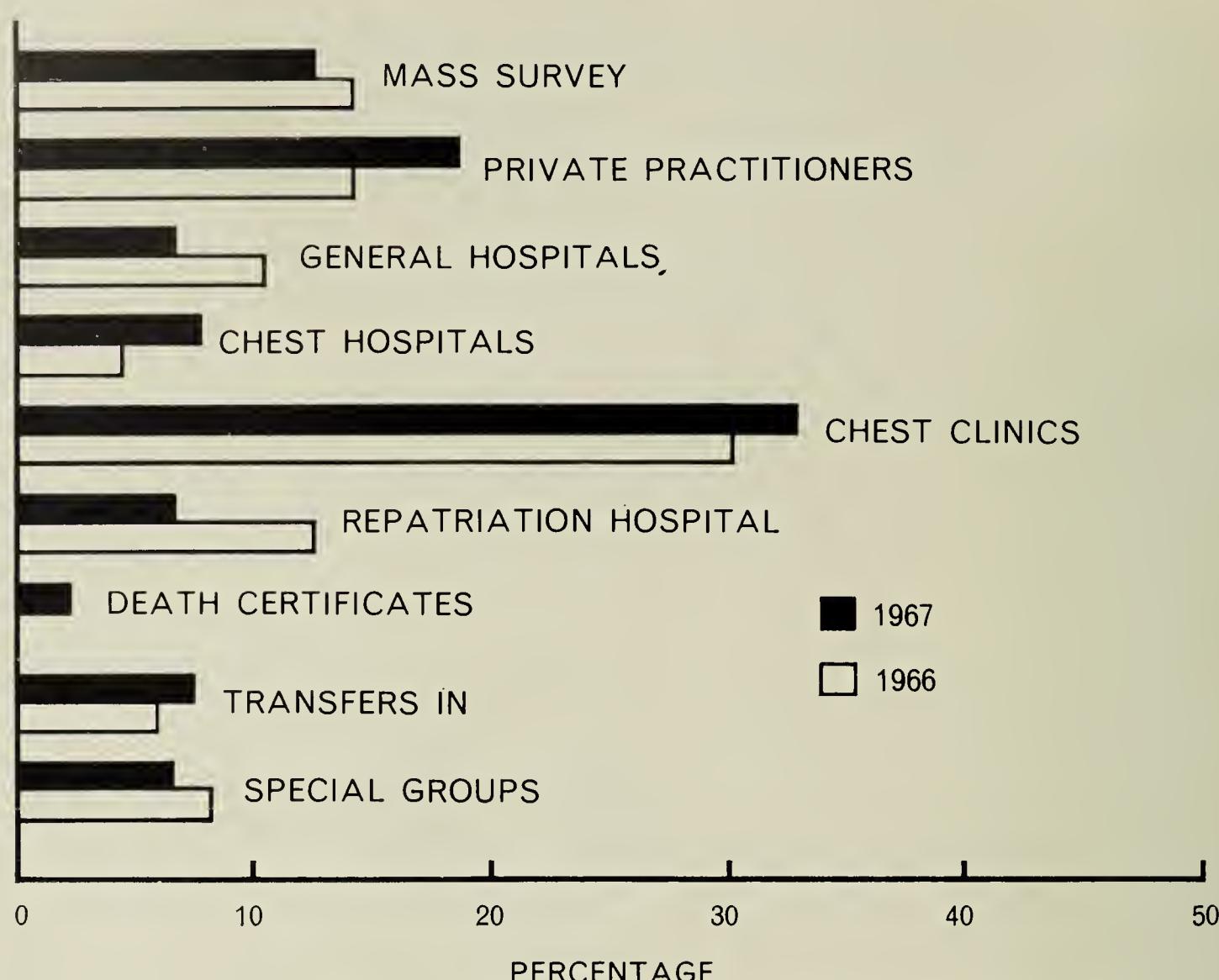
Table 9
CHILDREN NOTIFIED WITH MYCOBACTERIAL DISEASE OF LYMPH NODES

Year	Scotochromogens Identified (Runyon Group 2)	Battey Organisms Identified (Runyon Group 3)	M. TB. (Human) Identified	Cultures Negative
1961	...	1	...	1
1962	3	2	...	2
1963	...	3	...	8
1964	...	3	1	4
1965	...	1	...	5
1966	2	6	...	7
1967	1	3	...	9
Total number of children	6	19	1	36

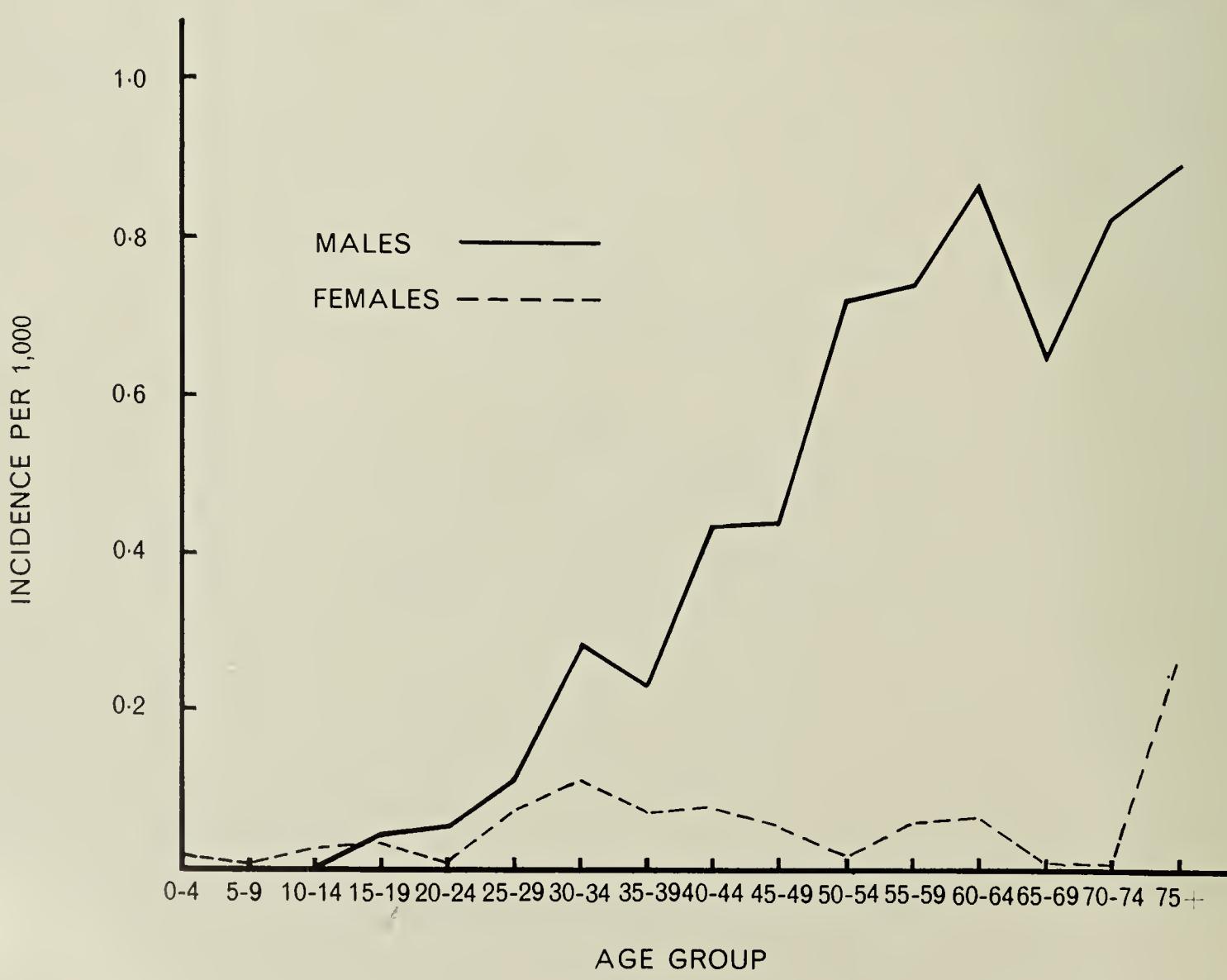
Table 10
PATIENTS NOTIFIED WITH ATYPICAL TUBERCULOSIS
(including reactivations)

Year	Runyon Group 1	Runyon Group 2			Runyon Group 3 (Battey)			Total
		Pulm.	PnLm.	Lymph Nodes	Total	Pulm.	Lymph Nodes	
1955	...	...	...	...	...	1	...	1
1956	...	...	...	...	...	1	...	1
1957	...	...	...	...	...	1	...	1
1958	...	...	...	...	...	4	1	5
1959	...	...	...	...	...	10	2	12
1960	...	1	...	1	1	11	1	12
1961	...	2	...	2	11	1	12	12
1962	...	1	3	4	8	2	10	10
1963	...	3	...	3	17	3	20	20
1964	...	6	...	6	14	3	17	17
1965	2	2	...	2	13	1	14	14
1966	2	3	2	5	7	6	13	13
1967	1	4	1	5	6	3	9	9
Total	5	22	6	28	104	23	127	

GRAPH SHOWING THE SOURCE OF NOTIFICATION OF CASES OF PULMONARY TUBERCULOSIS AS A PERCENTAGE OF TOTAL NOTIFICATIONS



GRAPH SHOWING THE INCIDENCE PER 1,000 IN AGE GROUPS FOR PULMONARY TUBERCULOSIS IN 1967



Western Australia

Pulmonary Tuberculosis

Year	Population in 1,000s	Notifications Received	Incidence Rate per 100,000 Population	Deaths Registered	Mortality Rate per 100,000 Population
1911	287	259	90.2	190	66.2
1912	301	429	142.5	220	73.1
1913	313	424	135.5	206	65.8
1914	323	353	109.3	229	70.9
1915	321	336	104.7	233	72.6
1916	313	511	163.5	225	71.9
1917	306	464	151.6	217	70.9
1918	308	432	140.5	245	79.5
1919	320	467	145.9	289	91.6
1920	330	442	133.9	259	78.4
1921	334	424	126.9	277	82.9
1922	341	387	113.8	256	75.1
1923	351	361	102.8	216	61.5
1924	363	381	104.6	228	62.8
1925	373	403	108.4	259	69.4
1926	381	415	108.2	252	66.1
1927	392	409	104.3	231	56.4
1928	408	395	96.8	282	69.1
1929	421	400	95.0	245	53.4
1930	429	569	132.6	218	50.8
1931	432	372	86.1	223	51.6
1932	435	339	77.9	203	46.7
1933	439	295	67.2	207	47.2
1934	442	287	64.9	218	49.3
1935	447	270	60.4	210	47.0
1936	452	338	74.8	193	42.7
1937	457	239	53.0	172	37.6
1938	464	247	53.2	177	38.1
1939	470	202	43.0	179	38.1
1940	473	231	48.8	181	38.3
1941	474	154	32.5	185	39.0
1942	477	113	23.7	175	36.7
1943	477	273	57.3	144	30.2
1944	481	219	45.4	134	27.9
1945	488	271	55.5	149	30.5
1946	493	343	69.6	163	33.1
1947	502	372	74.0	128	25.4
1948	515	325	63.1	157	30.5
1949	533	499	93.6	123	23.1
1950	558	586	104.8	129	23.1

DEATH CLASSIFICATIONS ACCORDING TO 6TH (1948) INTERNATIONAL LIST.

1950	558	586	104.8	125	22.4
1951	580	467	80.4	76	13.1
1952	601	508	84.5	75	12.5
1953	621	378	60.6	43	6.9
1954	640	348	54.3	57	8.9
1955	659	413	62.7	31	4.7
1956	677	424	62.6	43	6.3
1957	692	332	47.9	36	5.2
1958	706	355	50.3	22	3.1
1959	726	320	44.1	24	3.3
1960	731	296	40.5	29	4.0
1961	737	209	28.4	18	2.4
1962	755	243	32.2	24	3.2
1963	773	216	27.9	13	1.7
1964	790	176	22.3	20	2.5
1965	806	153	19.0	12	1.5
1966	836	134	16.0	16	1.9
1967	877	137	15.6	9	1.0

Appendix IV

Epidemiology and Special Services

Dr. R. Allen, Senior Medical Officer

1967 may be considered an historic year, as for the first time on record there have been no notifications during the year of Tetanus, Poliomyelitis or Diphtheria. This aim, achieved by active immunisation, must have seemed a remote pipe dream in the nineteen thirties, when Diphtheria notifications averaged over six hundred annually, and on three occasions exceeded one thousand.

The incidence of bowel infections remains at a high level, and the number of notifications of Infective Hepatitis (190) is the highest since 1961.

IMMUNISATION

Poliomyelitis

1967 saw the introduction of Sabin Oral Poliomyelitis Vaccine into Western Australia. Departmental policy concerning this vaccine follows recommendations by the National Health and Medical Research Council, and is aimed at offering three doses to as many persons as possible, regardless of previous Salk injections. In this State, as with the initial Salk Vaccine campaign in 1956, priority is being given to school-children, pre-school children, and certain groups of adults at risk, but age restrictions will be lifted at the conclusion of the child campaign during the latter part of 1968.

In addition to personal immunity, Sabin Vaccine confers high intestinal immunity, so that incidental transient symptomless infections do not occur. As a consequence polio virus may be eradicated from the community.

Public acceptance of Sabin Vaccine has been good, and parental consent has been granted in over 93 per cent. of children attending schools visited so far. Acceptance by the children is of course universal, for what child would refuse a lump of sugar when the alternative is an injection?

Since the commencement of the campaign on 1st June, 379,550 doses have been administered. Reactions following the vaccine have been rare and mild, consisting of a few influenza-like symptoms during the ensuing forty eight hours.

As expected with the introduction of Sabin Vaccine, the rate of Salk Vaccination has shown a dramatic reduction. This is expected to become even more marked next year, and will probably drop to an insignificant level in 1969.

Other Diseases

Immunisations given by the Epidemiology Section against diseases other than poliomyelitis fell during the year to 18,487 mainly due to these vaccinations being given elsewhere.

MEDICAL EXAMINATIONS

There were 926 medical examinations conducted during the year for male applicants to the Public Service.

TRACHOMA CONTROL

Field work by the Trachoma Unit was limited to the first half of the year, as the Sisters were seconded in June to assist in the Sabin Vaccination Campaign.

However, diagnosis and treatment visits were made to the Northern and Central Agricultural districts. A total of 371 cases of active trachoma were treated, representing a 32 per cent. activity rate of those examined. It is noteworthy that over half of the active cases were among the pre-school age group.

ANNUAL SALK INJECTIONS SINCE 1st JULY, 1956

	Year								No. of Injections
	1956	1957	1958	1959	1960	1961	1962	1963	
1956	224,466
1957	415,166
1958	273,017
1959	309,914
1960	140,590
1961	59,964*
1962	177,989
1963	203,754
1964	68,641
1965	61,243
1966	77,396
1967	29,215
Total	2,041,355

* Includes 10,134 Quadruple Antigen injections in 1961.

ANALYSIS OF SALK INJECTIONS

1st July, 1956,–31st December, 1967

Age Group	4th Injection	3rd Injection	2nd Injection	1st Injection	Total Injections
Under 15 years	179,226	301,764	343,882	362,401	1,187,273
Over 15 years	119,786	222,674	238,050	263,438	843,948
Total, all Ages	299,012	524,438	581,932	625,839	2,031,221

In addition to the above total, 10,134 injections of Quadruple Antigen (containing Salk Vaccine) were given in 1961, making the grand total of 2,041,355 separate injections.

SABIN VACCINE ADMINISTERED 1st JUNE, 1967—31st DECEMBER, 1967

Age Group	1st Dose	2nd Dose	3rd Dose	Total
0-4 years	31,269	21,634	15,203	68,106
5-9 years	43,654	40,807	36,179	120,640
10-14 years	46,453	44,451	40,369	131,273
15-19 years	14,523	13,231	12,071	39,825
Total, 0-19 years	135,899	120,123	103,822	359,844
20 years and over	8,274	6,278	5,154	19,706
GRAND TOTAL	144,173	126,401	108,976	379,550

POLIOMYELITIS INCIDENCE

Case No.		Year	Sex	Age	Virus Type	Vaccination Status
1	....	1956	M.	24	....	Unvaccinated
2	....	1956	M.	28	....	Unvaccinated
3	....	1957	M.	7	....	Unvaccinated
4	....	1957	M.	10	....	Unvaccinated
5	....	1957	M.	23	....	Unvaccinated
6	....	1958	M.	40	....	Unvaccinated
7	....	1959	M.	2	III	3 doses (onset 3 days after third dose)
8	....	1959	M.	3/12	....	Unvaccinated
9	....	1959	M.	2	....	2 doses
10	....	1959	F.	3	....	1 dose
11	....	1959	M.	7	III	Unvaccinated
12	....	1960	M.	7/12	....	Unvaccinated
13	....	1960	M.	3	I	Unvaccinated
14	....	1960	M.	1½	I	Unvaccinated
15	....	1961	F.	2	I	Unvaccinated
16	....	1961	M.	3	III	Unvaccinated
17	....	1962	F.	41	I	Unvaccinated
18	....	1962	F.	3	III	3 doses (onset 2 years after third dose)
19	....	1962	F.	28	III	Unvaccinated
20	....	1962	M.	37	III	Unvaccinated
21	....	1963	M.	11	III	Unvaccinated
22	....	1963	F.	35	....	1 dose
23	....	1963	M.	2	III	Unvaccinated
24	....	1963	M.	5	II	4 doses (onset 6 months after fourth dose)
25	....	1963	M.	26	II	Unvaccinated
		1964	Nil	....	....	....
		1965	Nil	....	....	....
		1966	Nil	....	....	....
		1967	Nil	....	....	....

TRACHOMA ACTIVITY, 1967

Table 1

Area	0-4 Years			5-9 Years			10-14 Years			Over 14 Years			Total		
	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.
Northern Agricultural District	170	90	52.9	253	76	30.0	198	21	10.6	28	....	....	649	187	28.8
Central Agricultural District	202	115	56.9	212	62	29.2	97	7	7.2	....	....	....	511	184	36.0
Total	372	205	55.1	465	138	29.7	295	28	9.5	28	....	....	1,160	371	32.0

Table 2

Year	0-4 Years			5-9 Years			10-14 Years			Over 14 Years			Total		
	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.	Ex.	Act.	% Act.
1962	1,422	1,159	81.5	1,728	1,194	69.1	1,209	457	37.8	845	146	17.3	5,204	2,956	56.8
1963	718	493	68.7	679	405	59.6	414	114	27.5	192	15	7.8	2,003	1,027	51.3
1964	843	542	64.3	878	471	53.6	674	114	21.4	589	15	2.5	2,983	1,172	39.3
1965	1,073	675	62.9	1,199	534	44.5	869	122	14.0	113	1	0.9	3,254	1,332	40.9
1966	922	550	59.7	1,088	405	37.2	785	134	17.1	219	3	1.4	3,014	1,092	36.2
1967	372	205	55.1	465	138	29.7	295	28	9.5	28	....	....	1,160	371	32.0

Appendix V

Child Health Services

R. Edmonds, Senior Medical Officer

1. HEALTH CENTRES

Four new buildings were opened in 1967, including two where the Infant Health Centre was combined with a Kindergarten. One was at Embleton and the other at Lynwood.

The increasing problem of supplying services to the periphery of the growing metropolitan area is becoming more manifest each year and a temporary solution was suggested by the Shire of Canning who built a large air-conditioned caravan unit, which could be moved daily from place to place. This unit is still in the experimental stage, but may provide a partial answer to serving the outer suburbs.

Table 1 shows some of the statistics for the last 3 years.

Table 1

		1965	1966	1967
Birth notifications received (including Correspondence)	....	13,853	14,904	17,199
Births registered	....	16,186	17,007	18,033
Gross attendances	....	231,191	240,401	240,513
Individual attendances	....	31,812	34,194	33,907
Home Visits	....	26,482	27,312	26,400
Telephone consultations	....	11,833	12,089	14,692
Hospital visits	....	N.R.	15,860	16,463

There has been no great change in the figures of gross and individual attendances since last year, but there has been a substantial change in the pattern of ages attending. The gross attendances of children under the age of 1 year has increased by around 4,300. The individuals, under 1 year, has increased about 350 and the total number of new babies seen increased from 14,904 to 15,265. It will be noted also that there was a substantial increase in the number of hospital visits made.

Although there has been a fall off in the pre-school attendances, those over the age of 12 months still represent over one third of the total individuals seen.

2. CORRESPONDENCE

The Correspondence Service was dealt with rather extensively in the last annual report and there seems little point in repeating the details. However, the amount of work occasioned by increase in the number of births, can perhaps be exemplified in the following table.

Table 2
CORRESPONDENCE SECTION

		1966	1967
Birth Notifications received	....	505	736
“ New ” Babies	....	705	874
Total requests for advice received	....	6,105	7,610

These increased figures were partly determined by the number of country centre which were closed down for various periods during 1966, but also represent wha

is probably a significant increase in the number of young children in country areas where there are no Infant Health Sisters available. This is determined, as well as by increase in the number of births, by the movement to newer industrial centres in the North. Some relief from the situation will occur in 1968 with the A.I.M. Sisters installed in the Kimberleys, but Pt. Hedland, Mt. Goldsworthy, Mt. Newman, Mt. Tom Price, Dampier and other areas are still loading the Correspondence Service increasingly.

This extra load on the Correspondence Sisters and clerical staff has been reflected in a small reduction in the number of pupils doing correspondence instead of the usual increase. Totals doing correspondence in 1967 were 1,335 as against 1,351 in 1966.

The multitudinous odd jobs which are carried out by the headquarter's staff, which were mentioned in the last annual report, have continued throughout 1967. Mention will be made later of their excellent work with natives around the metropolitan area, particularly at Allawah Grove and East Perth.

3. MOTHERCRAFT AND PARENTCRAFT

All sisters except one engaged in this work in the metropolitan area now have Infant Health Centres of their own to care for, and one Sister is full-time on lecturing to school girls during the day, and to expectant parents, both day and evening classes. This Sister gave 194 lectures to 666 pupils. There were three other Sisters who spent a proportion of their time in the metropolitan area working on parentcraft lectures and, together with Sister Kerr, conducted 342 classes, involving 612 parents. The Parentcraft Sisters gave talks to medical students, to groups—mostly nurses and other students, to Infant Health trainees and others.

A number of Sisters in the country are starting Parentcraft Classes with small groups, but whilst this scheme is still being tried out slowly, no record has been kept of the number of classes conducted.

4. PRE-SCHOOL HEALTH

In Centres

The extra number of infants under the age of one seen in the Centres in 1967 have somewhat reduced the attendance of pre-schoolers at the centres. Table 3 shows the figures for the past five years, 1963-66.

Table 3
NUMBER OF ATTENDANCES OVER THE AGE OF 1 YEAR ATTENDING INFANT HEALTH CENTRES 1963-67

			1-2	Over 2	Total
1963....	....	....	6,261	4,990	11,251
1964....	....	....	6,856	5,172	12,028
1965....	....	....	6,247	4,901	11,148
1966....	....	....	6,968	5,873	12,841
1967....	....	....	6,390	5,542	11,932

The "Pre-School Health Scheme" does not show any great change except a reduction in the number attending for the 5th year check, although there is a significant increase in the number joining the scheme in the first instance.

In the section taken care of by the Pre-School Medical Officer, (Kindergarten examinations) a report from one medical officer in the country was not included because it had not been received. However, despite this, the total shows an increase, mainly in the metropolitan area. This is seen in Table 4. In Kalgoorlie and Boulder a local medical officer examined 155 children. Geraldton area was not done and the Albany area report has not been received.

Table 4
KINDERGARTEN PRE-SCHOOL CENTRES

	Year	1965	1966	1967
Total	5,031	5,392	5,416
Metropolitan	3,301	3,839	4,077
Country	1,730	1,553	1,337

Dr Roberts included in her report the following :

" A request was received from Carnarvon kindergarten for a medical examination of the pre-school children. There are ten pre-school centres in the northern part of the State. None of these is visited by the pre-school medical officer. Some of them are visited and are examined by the Infant Health Sisters.

It is not possible to visit all country centres. There are approximately 80 centres in the country in the southern part of the State. Many of them are small play centres meeting on one or two fixed days in the week in hired premises. Some are on native reserves with fluctuation of attendances. These factors and the wide scatter of the centres and the distances between towns make it difficult to organise a complete cover.

Metropolitan Centres

Three new centres opened in 1967. At Embleton a combined Infant Health Clinic and Kindergarten was opened. At Lynwood a kindergarten was established as part of a housing development. At Fremantle a child minding centre was established as part of local council development.

There was an increase in the numbers attending the kindergartens, each kindergarten has now reached approximately its maximum number of children.

The pattern of health of the pre-school child was similar to previous years. There seemed to be a growing awareness of the importance of a healthy primary dentition. Fewer children required dental attention.

Parents and teachers were appreciative of the leaflets published by Health Education. The matter in the leaflets often formed the subject matter for a parent discussion group. Advice was frequently sought on matters of nutrition. To supplement the advice given, the booklet and leaflet material supplied by our nutrition adviser, Mrs Langelaan, was very useful.

As well as the medical examination of the children an important part of our work is with the parents and teachers in health education."

Each year, in this group, it is noted that some of the children are not immunized against Diphtheria or Poliomyelitis. Percentage has fallen from 1.4 to 1.1 per cent., however, since last year. This figure, in what is generally considered a rather favoured section of the community, demonstrates the continued necessity for health education directed towards immunizations.

5. VITAL STATISTICS

The total number of births in 1967 was 1,026 more than in 1966. The birth rate has also risen slightly (see Table 5.)

Table 5

	Year	Total Live Births	Birth Rate
1958	16,731	23.90
1963	17,290	22.23
1964	16,685	20.93
1965	16,186	19.85
1966	17,007	20.31
1967	18,023	20.55

This suggests that the previously falling birth rate has been arrested. 1967 is the first year in which vital events among full-blood aborigines are included. Statistics for earlier periods remain on the old basis which excludes such events, and they are therefore not strictly comparable with data for 1967.

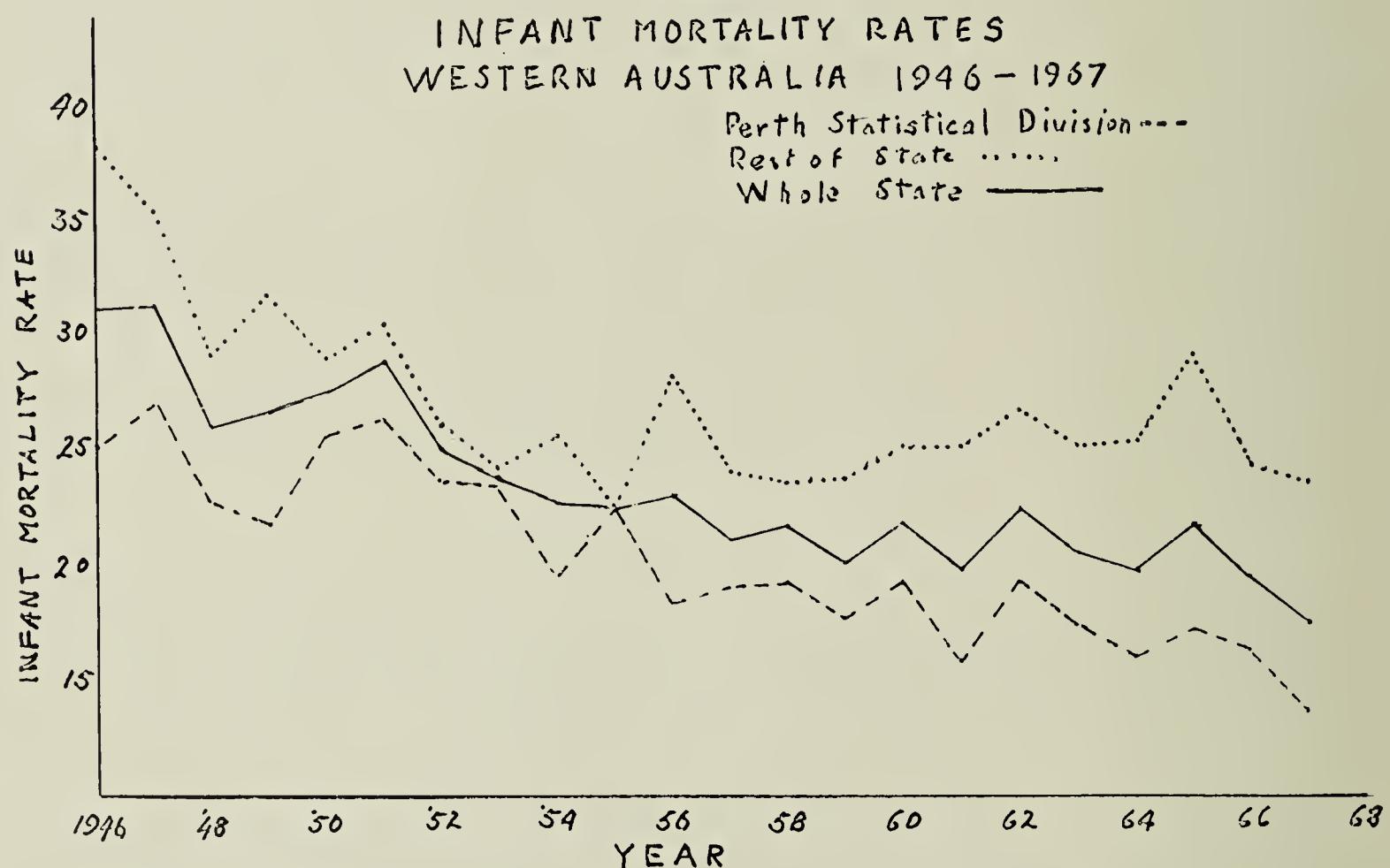
The infant mortality rate for 1967 shows a drop to 17.4 (19.3 for 1966) and this is, up to date, the lowest recorded. Table 6 shows three ten year periods and it appears that after being stationary for some time, the infant mortality rate is significantly falling.

Table 6

	1956-1965	1957-1966	1958-1967
Infant Mortality Rate	21.58	20.74

Figure I shows graphically the infant mortality rates from 1946 to 1967 for the "Whole State", the "Perth Statistical Division" and the "Rest of State".

Fig. 1



This graph is slightly different from those previously published. Changes in the Perth Statistical Division have caused the minor difference in the figures since 1957.

Again the figures for the Perth Statistical Division are very much lower than for the rest of the State and although there has been a fall in the infant mortality rate in the rest of the State, these figures were achieved 10 years ago.

Table 7 shows the actual number of deaths and the infant mortality rate for the Perth Statistical Division, the rest of the State and the whole State for the past 3 years. It must be noted again that full blood natives were excluded until 1967.

Table 7

Year	Perth Statistical Division		Rest of State		Whole State	
	Total Deaths	I.M. Rate	Total Deaths	I.M. Rate	Total Deaths	I.M. Rate
1965	169	17.1	182	29.0	351	21.7
1966	171	16.3	158	24.1	329	19.3
1967	148	13.6	166	23.4	314	17.4

It has long been thought that the people who are classified as "part aboriginal" might have contributed significantly to this discrepancy between Perth and the rest of the State, but since their deaths are not recorded separately, it has been largely conjecture. It can now be stated, unequivocally for 1967, that this is true. As will be mentioned later, a survey was carried out last year to determine the race of all the children who died under the age of 5. In the infant group (under the age of 1 year) there were 65 who were classified either as full blood or part aboriginal. Of these, 2 were domiciled in the Perth Statistical area, and 63 in the rest of the State.

Therefore the figures for total deaths in 1967 for infants not of aboriginal origin were :—

Perth Statistical Area	....	....	146
Rest of State	....	....	103

Since the total births of aboriginal children is not known it is impossible to say precisely what this would have done to the infant mortality rates, but without any doubt it would have brought the "rest of State" figure very close indeed to that of the metropolitan area.

While it would be improper to base any long term conclusions on this single year's survey, it at least gives evidence that the higher death rate in infants in the country is determined mainly by deaths among this group. There is evidence that deaths among natives, both full blood and part aboriginal, was lower in 1967 than is usual. This estimate is being confirmed by the current year's figures to date.

It seems likely, therefore, that the discrepancy shown so clearly by the 1967 survey is more likely to be an under—rather than an over—estimate of the significance of native deaths in the under 1 group.

Deaths in the 1—4 year group are shown in Table 8.

Table 8
DEATHS 1—4 YEARS

	Perth Statistical Division	Rest of State	Whole State
1963....	58	84
1964....	47	80
1965....	35	56
1966....	43	70
1967....	40	75

The difference between the two statistical divisions persists.

Aboriginal deaths in the 1—4 group were 13, 2 metropolitan and 11 other. This leaves 33 Perth and 29 from the rest of the State not aboriginal. Again it appears that the aborigines are contributing more than their share of deaths.

6. THE HEALTH OF NATIVE CHILDREN

As was mentioned last year, several new attacks have been made on the problem of this unfavoured group. The East Perth Centre has shown a considerable increase in attendances since last year, nearly all part-native children. A total of 306 attendances in 1966 is matched by 563 in 1967 and a total of 32 individuals for 1966 rose to 106. It is difficult to estimate the significance of work done in this area, but increased contact must at least have some effect.

It is anticipated that Allawah Grove Native Settlement will be closed by the end of 1968. However, great strides have been made in this place and this has been

reflected in many ways. There has been, for example, a considerable reduction in admissions from the settlement to Princess Margaret Hospital. The sister attending this centre reports, among other points :

Of the 7 babies under 1 year only 1 (with hydrocephalus and a shunt) has been admitted to Princess Margaret and there has been a reduction in the admissions, particularly readmissions of the residents between 1 and 2 years. Mothers buy eggs through the sisters, up to 20 dozen per week, all for cash. Immunizations are up to date. The home treatment of chronic otitis media has been highly successful. No longer do the sisters ferry patients backwards and forwards between the settlement and the hospital out-patients' department. The mothers are now keeping appointments themselves. Pediculosis capitis is being successfully treated. There is generally a great increase in the acceptance of responsibility of the home care for minor illnesses including cuts, sores and diarrhoea. Some support is given to the suggestion that some of these children may be suffering from lactose intolerance in that the older children tend to get more diarrhoea after a visit of the ice-cream vendor or drinking milk in greater quantities than usual. Rewards for picking up broken glass around the settlement had to be ceased, because some of the children became sufficiently sophisticated to break glass deliberately and bring it along for rewards.

It must not be thought, however, that all this has been achieved by the infant health sister alone. A great deal of the credit must go to the management and the workers on the settlement who have co-operated fully. The local doctors and school masters have also been completely co-operative, but above all the really splendid liaison that now exists between our staff and the Princess Margaret Hospital. The Registrar who visits once a week has been particularly helpful in directing home therapy.

The work done by the Australian Inland Mission sister at Fitzroy Crossing has also been continued through 1967 and with more than satisfactory results. A visit by the Senior Medical Officer early in 1968 to this area showed remarkable achievements in one station and the beginning of improvement on one of the local Missions. The work in these areas is hard and exacting. I am more than ever convinced that, to be effective with these primitive people in contact with a changing environment, almost daily contact is necessary, and continued supervision and encouragement of the people essential. This applies to the personnel of the stations, missions and schools as well as to the aborigines.

7. INFANT DEATHS, BY RACE

The infant mortality rate in Western Australia has been higher than the other Australian States. This has been determined by an excessive number of infant deaths in the statistical areas outside the metropolitan one. In fact, the metropolitan infant mortality rates for Western Australia have, for many years, tended to be the lowest in Australia. As mentioned previously, it has been thought that since full blood aborigines until 1967 were excluded from the vital statistics as published, the part natives in the State were contributing to this high infant mortality rate in the "Other areas". However, since births and deaths of part native individuals are not separately distinguished, this has been an assumption.

In order to test this assumption an attempt was made in 1967 to determine the racial origin of every child who died under the age of 5 years. This was all done by personal enquiry about each individual. They were classified, for this purpose, into "full-blood aboriginal", "part-aboriginal", and "not aboriginal". If there was the slightest doubt as to whether or not a child had any significant aboriginal origins it was placed in the last category—"not aboriginal". 313 infant deaths were investigated of the 314 deaths recorded by the Bureau of Census and Statistics.

Owing to the fairly considerable fluctuations from year to year, it was decided that one year's figures were insufficient and the survey is being continued through 1968

and possibly for longer if necessary. However, a statistical evaluation of the 1967 figures indicate that the differences between the aboriginal section and the "not aboriginal" are highly significant.

Table 9 shows the racial distribution of the deaths under the age of 1 year.

Table 9
INFANT DEATHS, 1967 BY RACIAL ORIGIN

Not Aboriginal	....	....	....	....	248	79%
Full blood Aboriginal	....	....	42	13.5% } Part Aboriginal	23	7.5% } 65
					313	100%

The native population (full blood plus part aboriginal) represents approximately 2.5 per cent. of the total population of the State. It will therefore be seen that this 2.5 per cent. of the population accounts for 21 per cent. of the total infant deaths. It should be noted however that this discrepancy is loaded by the probability that the age structure, if known, would show that the natives represent a larger proportion of this age group than the rest. The proportion is not known because the actual birth numbers are not known.

Table 10 shows the comparison between neo-natal and post neo-natal deaths in the same racial grouping.

Table 10

	Neo-Natal	Post Neo-Natal	Total
Not Aboriginal	.... 202 (81.5%)	46 (18.5%)	248 (100%)
Full blood Aborigines	19 } Part Aborigines	23 } 10 } 29 (44.5%) 13 } 36 (55.5%)	65 (100%)
	231	82	313

Two highly significant points arise from examination of the figures in Table 10.

The first is that the proportion of neo-natal to post neo-natal deaths in the section of the population classified as "not aboriginal" is entirely satisfactory (better than almost anywhere else in the world.) Taken in conjunction with the low infant mortality rate for this year, it shows that for the post neo-natal deaths, we are probably approaching the present irreducible minimum. The post neo-natal proportion of 55.5 per cent. of the total infant deaths among the natives is distressingly bad. If more than 50 per cent. of the deaths take place after the dangerous first four weeks, it demonstrates, without any shadow of doubt, that the total health situation of this section of the community is very bad indeed. It also shows conclusively that, at least for 1967, the generally higher infant mortality rate in this State is mainly determined by deaths in the native population.

The second point demonstrated by this table is that, of the 82 post neo-natal deaths 44 per cent. were contributed to by part aboriginal and full blood aboriginal infants coming from a group which, as a whole, represents 2.5 per cent. approximately of the total population.

It has already been pointed out that nearly all of these deaths took place in children whose homes were outside Perth.

It could be predicted that, if environmental factors were responsible for the excessive number of deaths in this group, infections would rank high in relation to other causes. Since the neo-natal deaths for full and part aborigines represents about 12.5

per cent. of the total neo-natal deaths, only the post neo-natal ones are shown in this table of causes of death. They are divided into four groups—*infections, accidents, malformations, and others*. They were taken from the death certificates.

Table 11
CAUSES OF POST NEO-NATAL DEATHS W.A., 1967

					Not Aboriginal	Aboriginal (Part and Full Blood)
Infections	....	....	....	....	25	32
Accident	....	....	....	....	5	1
Malformation	....	....	....	....	14	2
Other Causes	....	....	....	....	2	1
Total	....	....	....	....	46	36

It is not proposed to dissect the survey figures any further for 1967 but to await the results of the continued investigation in 1968. At the moment it appears that the disproportion between neo-natal and post neo-natal deaths among the aboriginal population will be much higher than those observed in 1967. With only approximately half the year's deaths recorded there are already 29 deaths from infections in the post neo-natal aboriginal group as compared with 32 for the whole of 1967. The "not aboriginal" post neo-natal deaths for 1967 was 25 and to date the 1968 figure is 11.

It must be reiterated that the numbers are small and liable to fluctuations from year to year. Clinical observation indicates that, despite recurrent infections in the first year of life and, indeed, well into the second year, the vast majority of these children so infected (mostly with gastro-enteritis or pneumonia) do not die. Throughout the State the medical facilities permit a high degree of sophisticated medical treatment, so what these deaths really represent is a very high morbidity rate. This, entirely apart from the suffering caused to these children and their parents, must represent a high cost in treatment, mainly in country hospitals. As an example of this, in 1967 there were 245 discharges of children under two from the Derby District Hospital classified as having suffered from gastro-enteritis of bacterial origin, with no deaths. This excludes those who were diagnosed as diarrhoea of virus origin.

8. GENERAL

Apart from the special problem of health among native children it appears that the physical health of the young in the community is very good. This is demonstrated by the low infant mortality and in particular by the small proportion of deaths taking place in the post neo-natal period. It is unlikely that marked improvement could be anticipated over the next few years. This is not to say that efforts can or should be relaxed. There was, for example, an increase in the incidence of scurvy in Western Australia in 1967, all among children who did not attend infant health centres. This could have been determined by an increased population being served by the same number of people working the same number of hours per week. As previously mentioned it seems probable that the increased pressure on the centres, particularly in the outer metropolitan area, prevented the sisters from being able to pay home visits to certain problem families as they would have done had the pressure been less.

It was pointed out in last year's report that whatever might be the ideal establishment for sisters in preventive work, the fact has to be faced that there are just not enough replacements of suitable training and type available to take care of resignations and retirement. Over the past four years it has been a stated policy to retire sisters when they reach the age of 60, but three full-time sisters at the moment have passed the retiring age and have been asked to re-join on a year to year basis. Furthermore

we are dependent for part-time temporary relievers to cover vacation leave, sickness etc., and for sisters attending courses. We use throughout the year, about nine of these women, and of these six are retired (and well over 60), two are married and may have to leave at any time, and the third is likely to join the permanent staff later. It is possible that if we were a little less selective or prepared to take on, more or less, anybody with the necessary qualifications on a temporary basis, we could keep most of the posts filled. We feel, however, that our standards are high and we wish to maintain them. These women in the field work almost entirely alone, have to maintain contact with the public and represent the department to the public. The maintenance of good relations with the medical profession, particularly with general practitioners, is also a most important function. It is therefore felt that we should continue to be selective in recruiting.

It is a great disappointment to find a falling off in the attendances of pre-school children in 1967. I am certain that this was entirely determined by the increased number of births and the apparently more urgent need of mothers to attend with children under the age of one. There is still a need for more accurate assessment of physical, emotional, and mental defects or departures from normal in this age group. This was dealt with in some detail in the last annual report, but with the present staffing I am afraid, that for a significant part of the population, this situation will probably continue. Possibly the appointment of another medical officer to do pre-school work may relieve this situation slightly.

During 1967 two additions to the usual procedures were made.

Hearing

Following a visit to New South Wales, where in selected areas attempts are being made to screen all babies for auditory defects at about six months, we have commenced a routine hearing check at or just after 6 months. It is a little early as yet to evaluate this, but we hope that most of the babies in this state will have at least any congenital hearing loss detected much earlier than they were in the past. The importance of recognising the individuals in this rather small group cannot be over emphasized.

Children at Risk

Consideration has been given over the past two years as to whether or not we should establish in this State an "At Risk Register". The literature, particularly from Great Britain, has been carefully examined and the decision was not to establish a central register.

As from September 1967 however, all sisters were instructed in the uniform recording of babies "At Risk". A limited number of criteria culled from the literature was given to them with fairly detailed instructions as to the manner of recording these on the children's cards. This means that as far as the individual is concerned, any known significant risk factors would be prominently recorded. An evaluation of this will be undertaken next year.

Research

Several small research projects were commenced in 1967 and are continuing in 1968.

Little research has been done in native children. Both in the South West of the State, where there are large numbers of part-aboriginal children, and in the North West and the Kimberleys where there are large numbers of full blood natives, there is a rich field for significant research. Significant, not only from the scientific point of view, but research which could yield some of the answers to the very considerable problem of the best way in which to help these depressed groups.

Changing social conditions in this State are making themselves manifest. One which is observed by many of the workers in the field, is evidence of considerable strains on young married people imposed by the high costs of purchasing their own home, furniture, cars etc. This has increased the number of young mothers who feel

compelled to go to work. The problems produced by this are significant and not the least is the unfortunate necessity for child minding centres.

This section of the department has co-operated intimately with the Child Welfare Department in formulating an amendment to the Child Welfare Act and regulations concerning the care and control of these centres.

It has been observed by many sisters in the field that over the past couple of years there has been an increase in the number of unmarried mothers retaining their illegitimate offspring. The figures for ex-nuptial births in this State has been increasing at a considerable rate. Table 12 shows this increase in actual numbers and as a percentage of the total births for each year since 1958.

Ex-nuptial births represent those cases where at the time of registration no statement was made as to the marriage of parents. As for other vital events 1967 ex-nuptial data include for the first time details of such events among full-blood aborigines.

Table 12

BIRTHS

				Total	Ex-Nuptial	Per cent. Ex-Nuptial
1958	....	....	....	16,731	854	5·1
1959	....	....	....	17,111	904	5·3
1960	....	....	....	16,926	921	5·4
1961	....	....	....	17,078	959	5·6
1962	....	....	....	17,064	1,005	5·9
1963	....	....	....	17,290	1,229	7·1
1964	....	....	....	16,685	1,311	7·8
1965	....	....	....	16,186	1,439	8·9
1966	....	....	....	17,007	1,607	9·4
1967	....	....	....	18,023	1,944	10·8

The increased illegitimate ratio demonstrated in this table occurs elsewhere (e.g. U.K. and U.S.A.) but in this State is significantly higher than for Australia as a whole. Of the other Australian States, only Queensland has a higher ratio.

Conclusion

The service is barely managing to hold its own in the infant field. Expansion in preventive medicine in the pre-school field is desirable. Integration with the schools medical service is long overdue. And there is a great need for more effective work among the native population.

Appendix VI

School Medical Service

Many country schools are now up to date on a two year inspection schedule and all have been examined within three years.

A total number of 56,089 children were examined, of whom 18,909 were in the country. The parents of 10,791 were notified of some defect or other including dental defects, 4,804 were referred for medical attention. Table II shows a good response by the parents in obtaining this medical attention.

A total number of 70,358 children were examined for Pediculosis (Table 3) and the number notified as infected were 364. Re-visits to ensure that effective treatment had been carried out brought the total number of heads inspected up to 98,190.

The general health and nutrition of the children remain good.

Table I
School Medical Service
EXAMINATION OF METROPOLITAN AND COUNTRY SCHOOLS, 1967

	Number Examined	Number Notified	Number Referred for Medical Attention	Number Referred for Home Attention and Observation	Number Requiring Dental Attention	Skin Complaints		Nutrition			Eyes Medical Attention	Tonsils Medical Attention
						Number	Percent.	3	Under 3	Over 3		
<i>Metropolitan Schools</i>												
Boys	19,057	3,635	1,424	1,013	1,261	84	....	18,475	73	436	688	48
Girls	18,123	3,022	1,198	708	1,100	60	....	17,480	105	389	659	30
Total	37,180	6,657	2,622	1,721	2,361	144	·39	35,955	178	825	1,347	78
<i>Country Schools</i>												
Boys	9,664	2,169	1,113	702	545	107	....	9,181	69	233	491	81
Girls	9,245	1,965	1,069	545	514	87	....	8,863	79	307	522	36
Total	18,909	4,134	2,182	1,247	1,059	194	1·026	18,044	148	540	1,013	117
<i>State Total</i>												
Boys	28,721	5,804	2,537	1,715	1,803	191	....	27,656	132	669	1,179	129
Girls	27,368	4,987	2,267	1,253	1,614	147	....	26,343	184	696	1,181	66
Total	56,089	10,791	4,804	2,968	3,420	338	·602	53,999	316	1,365	2,360	195

Table II
HOME VISITS BY SCHOOL NURSES

Total Visits re Medical Attention	Received Attention	Promised Attention	Disinterested	Out or Left District	Visits to Cases Referred for Home Attention	Parents Phoned or Called at Office
2,485	1,137	641	64	619	120	187

Table III
HYGIENE INSPECTIONS BY NURSES FOR PEDICULOSIS

		No. of Children Examined	Number Notified	Percentage
Metropolitan ....	....	49,912	180	·36
Country ....	....	20,446	184	·90
Total ....	....	70,358	364	·52

Including re-visits to above, a total number of 98,190 heads were examined or re-examined.

Appendix VII

School Dental Service

E. J. Turnbull, Senior Dental Officer

We commenced the year with a staff of fifteen Dental Officers and finished with twelve.

To cope with the rapid expansion taking place in the North-West, and to ease the pressure of work on the Port Hedland Clinic, it was again necessary to send two itinerant Dental Officers to the Pilbara district.

As no dentist is in private practice north of Geraldton the responsibility of providing an adequate dental service for the entire population in the north and north-west falls on the Schools Dental Service and involved having seven of our staff in the area.

This has depleted somewhat the number of Dental Officers available to conduct the mobile dental clinics in the southern part of the State.

During the year new dental clinics have been established and equipped at Dampier and Tom Price and an excellent service is being provided.

The annual trip along the Trans-Australian Railway Line again took place and for the first time, and with Treasury approval, this was extended to embrace a number of places on the Line in South Australia.

This was done at the request of the South Australian Department of Health and the Good Neighbour Council.

The Senior Dental Officer, and Dental Officer G. Medcalf, were involved with the dental team which conducted a pre-fluoridation assessment survey of some 5,800 school children at Kalgoorlie, Albany and the metropolitan area.

FIGURES FOR THE SCHOOLS DENTAL SERVICE

Number of country schools (including North-West) visited	....	86
Number of metropolitan schools visited	....	5
Number of native mission schools visited	....	13
Number of orphanages and institutions visited	....	7
Number of children examined	....	10,272
Number of children treated	....	6,020
Number of children requiring no treatment	....	3,723
Number of children to be treated by private dentists	....	63
Number of children whose parents ignored notices	....	466

Treatments

Fillings	....	9,333
Extractions	....	4,727
Silver nitrate treatments	....	82
Prophylaxis	....	1,127
Orthodontic appliances and dentures	....	42
Gold inlays	....	6
Other treatments	....	2,241

NORTH-WEST

The following work was done for the adult population by the seven dental officers in the north. Figures for children are included in "Schools Dental Service" details.

Number of Adult Natives treated free of charge 580

Treatments

Fillings	....	....	....	....	....	....	....	142
Extractions	....	....	....	....	....	....	....	622
Gold inlays	....	....	....	....	....	....	....	8
Dentures	....	....	....	....	....	....	....	24
Denture repairs	....	....	....	....	....	....	....	11
Prophylaxis	....	....	....	....	....	....	....	35
Other treatments	....	....	....	....	....	....	....	90

Number of Adult Whites treated free of Charge (Pensioners, missionaries, hospital Staff etc.) 267

Treatments

Fillings	....	....	....	....	....	....	....	517
Extractions	....	....	....	....	....	....	....	199
Gold inlays	....	....	....	....	....	....	....	24
Dentures	....	....	....	....	....	....	....	81
Denture repairs	....	....	....	....	....	....	....	51
Prophylaxis	....	....	....	....	....	....	....	138
Other treatments	....	....	....	....	....	....	....	131

Number of Paying Adult patients 3,162

Treatments

Fillings	....	....	....	....	....	....	....	2,737
Extractions	....	....	....	....	....	....	....	1,945
Gold inlays	....	....	....	....	....	....	....	73
Dentures	....	....	....	....	....	....	....	281
Denture repairs	....	....	....	....	....	....	....	205
Prophylaxis	....	....	....	....	....	....	....	346
Other treatments	....	....	....	....	....	....	....	662

Total debits raised : \$32,462.65.

Opportunity was again taken to have the Perth Dental Hospital Mobile Clinics treat children on our behalf at places they visited.

Details

Number of children examined 5,669

Treatments

Fillings	....	....	....	....	....	....	....	5,614
Extractions	....	....	....	....	....	....	....	926
Miscellaneous	....	....	....	....	....	....	....	873

Cost of this service at the rate of \$13.00 an hour for the time spent examining and treating children amounted to \$29,193.07.

Appendix VIII

Nursing Section – Operation

By Miss P. F. Lee, Principal Matron

Hospitals Inspected : Metropolitan Area	185
Country Areas	45

Accompanied by the Department's Health Inspector, numerous inspections were made of properties being considered for conversion to "C" Class requirements. These are not included in the above numbers.

New "C" Class Hospitals registered during 1967

Carinya, Bristol Avenue, Bicton	21 beds
Charles Jenkins, Rowethorpe	66 beds
Headingly Hospital, 48 Glyde Street, Mosman Park	16 beds
Mt. Yokine Hospital, 67 Spencer Street, Mt. Yokine	39 beds
Nazareth House, Bluff Point, Geraldton	7 beds
Parry House, Grove Road, Lesmurdie	16 beds
Two Pines, Cnr. Clarkson & Hardy Road, Maylands	50 beds
	215 beds

Scholarship Awarded for Post-Graduate Study at the College of Nursing, Australia (Melbourne) 1967

Mrs. Beryl Parnell—Nursing Administration Diploma Course.

On successfully completing the Course, Mrs. Parnell returned to Osborne Park Hospital as Deputy Matron.

Emergency Nursing Service

The Emergency Nursing Service continues to prove its worth. Many Hospitals would be forced to restrict their services were experienced Sisters not available to assist in times of severe staff shortage or by taking temporary charge of country hospitals when Matrons are not available. The number of sisters enrolled for this Service remains between 17 and 20.

GOVERNMENT SCHOOL OF NURSING

The Organiser of Nurse Training, Miss E. E. Harler, reports—

General Training

During the year recruitment into general training was as follows :—

Kalgoorlie Regional Hospital	23
Geraldton Regional Hospital	12
Northam District Hospital....	10
Transfers from Preliminary Training School to Nursing Aide Course	1
Transfers from General Training to Nursing Aide Course	3

Number of students to complete General Training :—

Kalgoorlie Regional Hospital	....	....	....	....	23
Geraldton Regional Hospital	....	....	....	....	6
Northam District Hospital	....	....	....	....	7
Resignations from General Training	....	....	....	....	10
Terminations	....	....	....	....	7
Transfer to Royal Perth Hospital	....	....	....	....	1

Nursing Aide Training

Number of Nursing Aides in Training	....	....	....	174
Number of Nursing Aides passed Nurses' Registration Board examinations	....	....	....	141
Terminations	....	....	....	23
Resignations	....	....	....	11
Transfer to General Training	....	....	....	3

In 1967 pre-clinical instruction was established for all Nursing Aides training in Departmental hospitals.

Pre-clinical schools have been arranged as follows :—

<i>Mt. Henry Hospital</i>	....	....	for	Mt. Henry Hospital
				Swan District Hospital
				Merredin District Hospital
<i>Albany Regional Hospital</i>	....	....	for	Albany Regional Hospital
				Narrogin Regional Hospital
				Katanning District Hospital
<i>Bunbury Regional Hospital</i>	....	....	for	Bunbury Regional Hospital
				Collie District Hospital
				Busselton District Hospital

Although the number of recruits to Nursing Aide training has increased, many more are needed, as this grade of Nurse provides a stable force in the hospital staffing pattern. The status of the Nursing Aide is improved as she is recognised as an important part of the Nursing force and this has influenced recruitment to a marked degree.

Hospital Staffing

Hospital staffing remains a problem in some areas. The retention of married Nurses, whether General trained or Nursing Aides, eases many staffing situations and many married Nurses are returning to Hospital positions when they find themselves free of family obligations.

Appendix IX

Nurses' Registration Board of Western Australia

R. J. Harrison – Secretary

Registrations

The following table sets out the number of initial registrations/enrolments accepted during the year. 1966 figures are also shown for comparison purposes.

Division of Register	Number of Registrations Accepted					
	Qualified by examination in W.A.		Qualified outside of W.A.		Totals	
	1966	1937	1966	1967	1966	1967
General	281	275	506	530	787	805
Children's Nurse .... .... ....	....	....	5	9	5	9
Mental Health Nurse	13	30	20	23	33	53
Midwifery Nurse	102	116	241	232	343	348
Mothercraft	19	16	7	8	26	24
Dental Nurse	14	31	....	....	14	31
Infant Health Nurse	16	18	22	18	38	36
Nursing Aide (Enrolments)	117	267	49	64	166	331
Totals	562	753	850	884	1,412	1,637

Of the 530 external registrations (General) accepted by the Board, 274 applicants trained in other States of Australia, 174 from England and Wales, 15 from Scotland ; 17 from New Zealand ; 6 trained in Holland ; 7 trained in India ; 5 in South Africa ; 5 from Ireland ; 4 from U.S.A. ; 3 from Germany ; 4 from Singapore ; 4 from Canada ; 5 from N/Ireland ; and 1 each from France, Denmark, Malaysia, Switzerland, Argentina, Rhodesia and Norway.

Of the 9 external registrations (Children's Nurse) accepted by the Board, seven applicants trained in England, one in Scotland and one in Singapore.

Of the twenty-three external registrations (Mental Health) accepted by the Board, seven applicants trained in other States of Australia, fourteen from England, one from Scotland and one from Germany.

Of the 232 external registrations (Midwifery) accepted by the Board, 138 applicants trained in other States of Australia, 65 from England ; 11 from Scotland ; 4 from New Zealand, 3 from Ireland, 2 from N/Ireland, 3 from India, 3 from South Africa and 1 each from Switzerland, Singapore and Italy.

Of the eight external registrations (Mothercraft) accepted by the Board, seven trained in other States of Australia and one in England.

Of the 22 external registrations (Infant Health) accepted by the Board, 13 applicants trained in other States of Australia, 4 from England and 1 from New Zealand.

Of the 49 external registrations (Nursing Aide) accepted by the Board, 39 transferred from General in Western Australia, 5 trained in other States of Australia, 13 from England, 3 from New Zealand ; 2 from Germany and 1 each from Scotland, Bavaria and India.

Removals and Restorations

The following table sets out the numbers of those persons whose names have been removed from, or restored to, the divisions of the Register, as required under Sections 11 (1) and 11 (3) of the Act, (Non-payment of annual re-registration fees).

Figures for 1966 are shown for comparison purposes.

Division of Register	Number Removed		Number Restored		Affect on Register 1967	
	1966	1967	1966	1967	Gain	Loss
General	463	657	270	269	...	388
Children's Nurse	3	1	2	3	2	...
Mental Health Nurse	30	31	18	11	...	20
Midwifery Nurse	219	249	80	80	...	169
Mothercraft Nurse	17	14	...	...	...	14
Dental Nurse	5	19	...	...	...	19
Infant Health Nurse	19	35	14	14	...	21
Nursing Aides	111	192	40	40	...	152
Tuberculosis Nurse	15	11	3	3	...	8
Totals	882	1,209	427	420	2	791

Examinations

The Board conducted 22 sets of examinations, involving 817 candidates, as set out in the following table. The number of examiners used to conduct these examinations totalled 149.

Title	No. of exams	Number Candidates 1st Attempt			Number Results		
		Total	Pass	Fail	Total	Pass	Fail
General	2	314	286	28	37	31	6
Mental Health (Final Exam)	2	27	24	3	3	3	...
Mental Health (First Year)	2	19	18	1	1	1	...
Midwifery	2	115	115	...	...	...	...
Mothercraft	3	16	15	1	...	...	...
Dental	2	19	19	...	...	...	...
Infant Health	3	18	18	...	...	...	...
Nursing Aides	3	244	235	9	6	3	3
Totals	19	772	730	42	47	38	9

In addition to the above examinations, the Schools of Nursing conducted First Year Assessment Examinations for a further 479 General Nursing Candidates. The Nurses' Registration Board gave overall supervision and issued certificates to those who were successful in passing the First Year Professional Assessment.

Outlines of Other Business

Agreement to change the Regulations to allow the First Year Professional Assessment Examination to be conducted between the Ninth and Fifteenth Months of training at the discretion of the School of Nursing.

Agreement to change the Regulations to enable General Nursing Certificate, Oral examinations to be reserved for :—

- (a) Marginal Fail Candidates.
- (b) To confirm Credit Candidates.

Preparation of a :—

- (a) Syllabus for a Revised Hospital-Based Diploma Course for General Nurses.
- (b) A guide for the new Syllabus.

Addition of Bentley Hospital to the list of Hospitals recognised for provision of supervised practice for Nursing Aides.

Agreement to suggested changes to the Nurses' Registration Act, proposed by the Sub-Committee. Action has been taken to have the changes presented to the Minister.

ANNUAL REPORT OF INTAKE AND WASTAGE OF GENERAL STUDENTS, 1967

Comparative Figures for all levels
of Education

		Stages of Withdrawal						Comparative Figures for all levels of Education								
		Reasons														
Education	Theory Weak	Marriage	Failure to Adjust	Health	Dismissal	Transfer to N/Aide	Transfer to other Hospital	All other Reasons	Pre. 1st year Assessment	Fail 1st year Assessment	2nd Year	3rd Year	Total Intake 516	Total Wastage 167	Per cent. Wastage 32.35	Per cent. Retained 67.65
Leaving	...	2	20	3	3	3	1	12	22	3	20	7	157	52	33	67
Failed Leaving	...	5	4	4	3	2	2	1	10	3	4	...	130	17	13	87
4th Year	...	3	4	4	3	5	2	11	1	6	...	3	69	21	30	70
Junior	...	16	14	14	8	10	3	8	42	12	14	5	147	73	50	50
3rd Year	1	2	...	...	...	2	2	...	...	13	4	31	69

SCHOOLS OF NURSING

Education	R.P.H.		Fremantle		P.M.H.		Mount		St. John		Kalgoorlie		Geraldton		Northam		Sir Charles Gardner		
	IN.	W.	IN.	W.	IN.	W.	IN.	W.	IN.	W.	IN.	W.	IN.	W.	IN.	W.	IN.	W.	
Leaving	...	46	23	32	9	23	6	2	...	...	8	3	1	4	5	1	2	...	38
Failed Leaving	...	40	7	19	1	20	3	2	...	...	10	7	1	3	3	1	1	...	32
4th Year	...	34	10	11	7	6	2	2	...	...	5	10	5	5	14	3	1	4	5
Junior	...	44	25	30	19	17	6	8	...	...	4	...	1	5	1	2	8	...	...
3rd Year	...	6	3	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Totals—		170	68	93	36	63	17	14	5	39	9	24	11	22	5	13	4	75	11
Per cent. wastage
Per cent. retained

Prepared from Records of Incomplete Training Forms submitted to the Nurses' Registration Board.

Appendix X

Division of Occupational Health

D. D. Letham, Physician in Charge

THE PNEUMOCONIOSES MINING INDUSTRY

Medical Examination

A total of 5,301 men were examined under the relevant Mining Acts by the Mines Medical Officer. Among the active miners, there were 336 men suffering from silicosis (22 new cases), 21 from asbestosis complicated by silicosis (8 new cases), and there were four new cases of tuberculosis.

Pneumoconiosis Medical Board

A total of 320 men were referred for assessment of disability due to pneumoconiosis. There were 187 new claims and of these 109 (58.5 per cent.) were successful. An analysis and comparison of the Board's findings since its inception, taken from the Chairman's Annual Report, is as follows :—

ANALYSIS OF SUCCESSFUL CLAIMS 1965—1967

Year	Total	Diagnosis			
		Silicosis		Asbestosis (with or without silicosis)	
		Number	Per cent.	Number	Per cent.
1965....	248	240	97.4	8	2.6
1966....	281	261	94.5	20	5.5
1967....	233	202	86.7	31	13.3

Of these totals in these years, 26 (10.4 per cent.), 45 (16 per cent.) and 55 (23.6 per cent.) men respectively were also significantly disabled by chronic bronchitis.

Silicosis is obviously still a problem in the gold mining industry. Modern dust sampling techniques must be introduced and comprehensive surveys carried out so as to concentrate dust suppressive measures and ventilation where most needed. New cases of asbestosis will continue to appear, despite the closure of the mine at Wittenoom. The history of disease and death associated with the mining and milling of blue asbestos does not encourage any hope that safe mining and milling of the mineral would be an economic proposition.

Nickel

Nickel mining and concentration processes were inspected at Kambalda. Silicosis is unlikely to be a problem in these mines, but dust concentrations must be kept at low level to prevent the development of nickel itch or sensitization dermatitis which, once developed, may force a miner out of the industry.

Manganese

Manganese mining was also inspected. The inhalation of manganese dust can cause bronchitis, chemical pneumonia and a serious mental disease similar to Parkinsonism. The mining, crushing, carting and shiploading of manganese is very dusty, but there is a very high labour turnover and it is unlikely that anyone stays long enough to develop disease. However, dust concentrations must be kept at a low level and the health of the men protected from a serious potential hazard.

Iron Ore

With notable exceptions, men working in the iron ore industry are exposed to excessively high atmospheric concentrations of fine iron dust. Pure iron ore dust is considered to be inert, but very little is known of the long term effects of exposure to high concentrations. It may cause chest X-ray changes similar to silicosis, but without comparable disability, and whether it will produce localized disease, like bronchitis, is unknown.

OTHER DUSTY OCCUPATIONS

Regular medical supervision of men in other dusty trades was continued and over six hundred men were X-rayed. There were three new cases of asbestosis in the asbestos-cement industry—one in a pipe lagger—one new case of silicosis in a foundry-man and one employed in the manufacture of pipes and tiles. Sandblasting continues to be a serious health hazard and an air pollution problem. Much of this work appears to be done in circumstances outside the scope of the Factories Act; hence the Abrasive Blasting Regulations are not operative. Despite constant supervision and inspection, the work is still carried on in a very hazardous manner, and it is difficult to see how silicosis can be avoided. The air supply to the sandblaster is frequently foul and contains oil droplets, the consequences of which to a sensitised bronchial mucosa cannot be estimated. Air filters are usually inadequate and it is doubtful if air from industrial compressors can ever conform to the Standards Association Code. The use of abrasive blasting material containing more than 5 per cent. free silica (SiO_2) should be prohibited.

A survey of a number of premises specialising in brake and clutch maintenance work was carried out and concentrations of dusts and air were measured and analysed. Although the work was dusty, the asbestos content of the dust was generally very low.

NOISE

HEARING CONSERVATION PROGRAMME

A number of new industries have been investigated and the previous programmes continued in the Metropolitan and Goldfield areas. The miners' interest has been maintained and a large number of men wear ear protection. More modern mining methods and machinery at Mt. Charlotte and Kambalda have produced noise levels higher than the average in the industry, and in many instances ear muffs have been recommended and are being worn.

The following is a list of the places visited and the number of persons tested and fitted during the year :—

		Audiograms	Ear Plugs
North-West Cape—U.S.N. Communications Sta-			
tion	34	34	
Ravensthorpe Copper Mine	47	26	
Kalgoorlie Mines	457	190	
Midland Abattoirs, Health Inspectors	29	28	
Finger Jointers Pty. Ltd., Forrestfield	19	16	
Osborne Park Timber & Trading Co. Pty. Ltd.	14	5	
Blind School, Maylands—Wicker Work	9	2	
Reserve Bank—Coin counting machine	9	9	
Metal Manufacturers (W.A.) Pty. Ltd., O'Connor—			
Cables	9	9	
Vinidex Pty. Ltd., O'Connor—Plastics	2	Muffs	
Moran H. & Co.—Wrought Iron,	1	1	
Wembley Technical School—Apprentice boiler-			
makers	23	13	
School boy, repeat audiograms	146	....
<hr/>			
Total	799	334	
<hr/>			

In addition to these, 146 visits in all were made by the Sister on initial enquiries and follow-up visits.

The findings of significant hearing loss in a percentage of young people at school and in industry prompted an attempt to commence hearing conservation at an early stage of apprenticeship. A film was shown, a lecture given, ears examined, tested and ear plugs fitted at a technical school.

During the year there was a report of possible hearing damage from a toy Sonic Blaster Bazooka. Noise levels were estimated to be well above hearing conservation levels. Because of the danger to children's hearing if the toy were fired close to the ear, wholesale toy dealers co-operated fully in banning the toy; all the toys were seized and destroyed under supervision.

DERMATITIS

Although 27 notifications were made to the Department, the Commonwealth Statistician reported over 300 lost time instances during 1967 due to industrial dermatitis. Dermatitis appears to be widespread throughout industry, although frequently only one person is affected in a particular factory. There was an exception at a plastics factory where a number of employees were affected by a chemically treated fibreglass. In a wool scouring works, four men developed fairly severe arsenical dermatitis. General hygiene was not good and the arsenic solution used to treat the skin had been allowed gradually to become over-concentrated.

Following a complaint by the Meat Employees' Union that multiple warts were very prevalent on the hands and forearms of slaughtermen, a survey was conducted in a number of abattoirs. This survey suggested that nearly 50 per cent. of the slaughtermen have or have had warts on their hands or forearms since commencing abattoir work and that this very greatly exceeds the prevalence in the general adult population.

PESTICIDES AND FUMIGANTS

Fumigation

During the year fewer ships were fumigated because of a higher standard of cleanliness in the vessels carrying grain. Five ships only were fumigated with methyl bromide. This work was supervised and clearance certificates issued to allow crew and workmen to board.

Commercial fumigators and flour mills, dried fruit premises and nurseries were also inspected and supervised. Supervision was continued over commercial pest control firms, fruit fly sprayers and others engaged in pest control work, and recommendations made in respect of protective clothing and safe practice where considered necessary. A number of routine cholinesterase tests were done and a few urinary arsenic and H.E.O.D. levels estimated. These tests, apart from urinary arsenic levels in employees of the wool scouring company using an excessively strong arsenical mix, were within normal limits.

Aerial Spraying—Ord River

Because of the high toxicity and high concentration organo-phosphorus and organo-chlorines used in this area the District Medical Officer carried out a number of cholinesterase estimations on exposed personnel. Two men mixing chemicals had levels considerably below normal and one of these was suspended from mixing pesticides for two weeks. Medical control of these pesticides operators has been difficult and the co-operation of the men themselves reluctant. Medical examinations of personnel exposed to highly toxic chemicals in high concentrations should be mandatory.

GASES AND VAPOURS

Isocyanates

All premises making polyurethane products were visited. A number of men were affected by isocyanates in a motor body building works. Although M.D.I.* was being used, the fine particulate spray was widely disseminated throughout the

*M.D.I.—Diphenylethane.

works. Following tests for atmospheric concentrations, alternative safer working conditions were recommended to the management. In addition to the cases previously reported, a man making paper rollers, using T.D.I.,† developed a severe acute chest illness and substantial, structural and procedural changes had to be introduced.

†T.D.I.—Toluene di-isocyanate.

P.T.F.E.

Polymer fever was found in a technician using Poly tetra fluoro ethylene (P.T.F.E.) spray applied on to moulds as a release agent. He was in the habit of rolling his own cigarettes at work and introduced P.T.F.E. into the tobacco with contaminated hands and inhaled the toxic products on combustion.

COMMERCIAL UNDERWATER DIVING

Two incidents involving accidents to men employed to work under water were investigated. The investigation revealed serious shortcomings in regard to the training of divers and attendants, equipment, health, standards, availability of recompression chambers, codes of safe practice, etc. The volume of this type of work is increasing and regulations to ensure safe practices may be needed. All vendors of compressed air for SCUBA divers were visited and a number of hookah units inspected. The quality of the air supply was tested and advice given where appropriate.

METALS

Lead

Seventy-six men working with lead had medical examinations during the year. A man engaged in the manufacture of P.V.C. pipes exposed to lead stearate and lead carbonate dust developed lead poisoning. It first proved difficult to improve working conditions but a work practice routine was introduced so that all the handling of lead could be done under efficient exhaust ventilation ; this seems to have removed the hazard. Despite regular inspection and medical supervision, two more lead battery breakers, for salvage, developed lead poisoning after only three to four weeks' exposure. The nature of the work and primitive working conditions are difficult to keep consistently safe. Tests show that simply pulling batteries down from the stock pile produced atmospheric lead levels of 7.2 mgm/m³ (M.A.C. for lead is 0.2 mgm/m³) in the breathing zone of the breaker. During the actual breaking of the batteries 0.72 mgm/m³ when the bottles were fairly wet rising to 2.75 mgm/m³ with drier conditions. Safe salvage can obviously only be done in excellent working conditions and assistance was given to the Department of Labour in the preparation of regulations to this end.

SPRAINS AND STRAINS

KINETICS

In the first half of the year Mr. D. J. Kemp, still working for the Division one week each month, completed the programme of instruction in kinetic lifting in departmental and board hospitals, all of which have now been visited. In July he submitted a detailed report which makes clear the limitations of manual lifting and moving of patients and the need to develop mechanical aids.

On the 1st August, he was appointed full-time Kineticist to the Division. He established courses in kinetic lifting for trainee nurses at the Government School

of Nursing, and for trainee nursing aides at Mt. Henry Hospital. Over a period of four months, a concentrated effort was made to improve the lifting pattern of the staff at Mt. Henry and Sunset Hospitals. He produced short films as visual aids to this programme.

The Medical Department, recognising the value of reducing strain in nurses by mechanical aids, made a grant of \$1,000 towards producing a special wheel-chair. This is being specially designed to eliminate excessive weight bearing by nurses in the movement of dependent patients. It is anticipated that further mechanical aids will be developed within this Division.

AIR POLLUTION

Scientific Advisory Committee

Of the eleven meetings during the year, eight were held after the 2nd June when the Clean Air Act became effective.

The Committee recommended to the Air Pollution Control Council that 77 applications for licences for scheduled premises be granted.

Much of the time of the committee was taken in the consideration of new premises, of which there were three ; and of conditions for licences for old premises. There were ten of these, eight of the premises concerned having been the subject of complaints of air pollution.

Complaints

Most complaints were of :—

Dust from a quarry, a cement works, a plywood factory.

Irritating emissions from oil fired boilers, a galvanising plant, a fertilizer works.

Odours from a plywood factory.

All of the premises which are subjects of these complaints have been required by the Council to exercise control by specified means over the air pollutants which are the sources of complaint. Sandblasting as a source of public complaint is also being investigated.

Port Hedland

Large quantities of ore have been stored and loaded on to ships at Port Hedland by a Company mining iron ore. This operation was well established before the 2nd June, when the Clean Air Act became effective. By this time, Port Hedland had experienced gross pollution of the air with iron ore dust which settled in dwellings throughout the town. The Company is now taking steps to comply with the provisions of the Clean Air Act.

Enquiries

Over one hundred enquiries, and requests for advice, on technical aspects of air pollution were received during the year.

Staff

The volume of technical work involved in the control of air pollution is increasing rapidly ; this has followed the proclamation of the Act. As well, and more significant, is the rapid development of new industry in the State. There is an immediate need for another professional officer to assist the Engineer, Clean Air.

EDUCATION

Officers of the Division gave lectures and addresses as follows to :—

- Medical graduates
- Fifth year under-graduates
- Trained nursing staff
- Trainee nursing staff
- Health inspectors
- Factory inspectors
- Farmers (including State and National broadcasts)
- Safety engineers

and at the :—

Institute of Technology

SUMMARY

Rapid development of mining in the north of the State has resulted in exposure of workers, and the general population, to dust from a variety of mineral ores. Experience in Port Hedland indicates that, apart from the possible health hazard to workers, these dusts can constitute a major problem of air pollution control.

Sandblasting around Perth has been increasing with, in some cases, little regard to the occupational hazard of silicosis ; as well, it is a source of general air pollution.

Poor appreciation of the health hazards involved in aerial spraying in the Ord River area is of considerable concern because of the high toxicity of some of the pesticides used.

It is evident that without statutory control, industries large or small could still develop in this age observing standards of public health which belong to one bygone.

Appendix XI

Technical Information Service and Library

J. F. Woolcott, M. B., Ch. B.

The year 1967 for the Library was marked by one outstanding feature—shortage of staff. It was noted in the 1966 report that at the end of that year no replacement had been obtained for Miss McGuire. This state of affairs held until April, 1967 when a temporary assistant, Mrs Jean Bigsby, was appointed. In spite of repeated advertising no senior experienced qualified applicants came forward.

The statistics for the year, given below with those for the four preceding years show about the same number of non-journal publications received. The bulk of these (70 per cent.) were for the main P.H.D. Library which meant finding shelf space for 580 new publications. Of the remainder, 92 were for various hospitals, 45 for Child Health Services, 45 for the Public Health Laboratories, 27 for the State X-ray Laboratory, 13 for the Government School of Nursing, 7 for the Nurses' Registration Board and the remainder for 9 other small libraries.

The 40 new journals, giving a total of almost 600 received, exemplify the continuing rapid expansion in the technical publishing fields with which the library is concerned. To be adding new journals at the rate of almost one a week indicates a rapid growth rate indeed and coupled with the 12.7 per cent. increase in routine circulation of journals shows the increased and increasing work-load the library carries.

The Medical Library of W.A. was once again the main source from which this library borrowed and the close and friendly co-operation between the two libraries is a pleasure to record.

Fremantle Hospital and Hollywood Repatriation General Hospital continue to be the biggest institutional borrowers from the P.H.D. Library. In 1967 Fremantle borrowed 134 items (133 in 1966) while Hollywood jumped from 85 in 1966 to 112 in 1967. There were, including these two, five libraries who borrowed more than 50 items during the year, and nine libraries who borrowed between 10 and 50 items. The figures show a steady rise in the total number of institutions borrowing from the P.H.D. Library.

During 1967 the number of people actually using library premises for reading and studying library material increased noticeably. No actual figures are available to indicate this nor are there statistics kept to indicate another expanding figure. This is the number of requests received for reference material either in terms of specific references (with details of author, journal, year, volume number, pagination, etc.)

Items	1963	1964	1965	1966	1967
<i>General—</i>					
Non-journal publications received	856	727	753	882	826
Additional journals received	24	54	39	30	40
Total journal titles received	449	503	542	572*	596
Average monthly journal routing	674	850	1,145	1,161	1,309
<i>Borrowing (excludes routine journals)—</i>					
From all other libraries	474	340	437	299	262†
From W.A. Libraries	429	280	407	283	245
From Medical Library of W.A.	310	179	232	169	127
From Libraries outside W.A.	45	60	30	16	17
<i>Lending (excludes routine journals)—</i>					
All external loans	289	339	720	837	722
To Medical Library of W.A.	41	42	117	111	90
Number of organisations to which loans made	24	24	43	54	56
Loans made outside W.A.	N/A	22	67	59	31
Photocopies supplied	1,662	2,965	1,127	1,610	1,680

* Includes 16 journals in process of transfer to Mental Health Services Library.

† In addition 60 photocopies, xerox copies, etc., were received, 57 from outside W.A. and 3 from sources within the state.

or in more general terms such as a request for information on a general topic. Attempts are being made to get some figures on the volume of these information enquiries.

In 1965 when the Library moved into its present premises it was a great disappointment that the architects had not taken the advice given them about spacing of library shelving and had installed the shelves far too far apart thus wasting a considerable amount of floor space and limiting severely and unnecessarily the total footage of shelving available. What was expected to be adequate library space for 8 to 10 years seems likely because of this space wastage to cause problems in 1969 after only four years.

Undoubtedly the most interesting development of the year arose out of a report in the Medical Journal of Australia. In the August 12th issue under the heading "Medical Aid to Indonesia" the journal noted that medical schools in that country were having great difficulty in purchasing or obtaining basic medical journals and appealed to Australian libraries to help where they could. Because of the wide geographical dispersion of the units comprising the Public Health Department and the extensive dependence of technical officers on routine circulation of journals, the P.H.D. Library has to subscribe to multiple copies of several basic journals. Once routine circulation has finished only one copy is needed for storage and reference purposes so the library has spare duplicates. The availability of these was made known by correspondence with the Dean of the Faculty of Medicine of the University of Indonesia in Djarkarta. Departmental approval was obtained once the Dean had specified the journals that were needed and, commencing in 1967 this library has been sending regularly spare and unwanted copies of the British Medical Journal, the Bulletin of Hygiene and the Journal of Pathology and Bacteriology. This international gesture of goodwill is something this library is proud to be associated with.

Indeed, goodwill and co-operation between libraries locally is at a very high level and the co-operation and help received from a large number of libraries throughout Australia as a whole is warmly acknowledged.

Appendix XII

State X-Ray Laboratory

B. E. King, Physicist in Charge, Physics Division

INTRODUCTION

The State X-ray Laboratory consists of a Medical Physics and an Engineering Division. This report is concerned with the Medical Physics Division, which is responsible to the Radiological Advisory Council for the administration of the Radioactive Substances Act and for the provision of Radiation Protection and Medical Physics Services.

RADIOACTIVE SUBSTANCES ACT

Under the Radioactive Substances Act, radioactive substances may only be used by licenced persons. X-ray apparatus used by dentists or medical practitioners for radiography is required to be registered, but its use is exempt from licencing. Users of fluoroscopic or any other X-ray apparatus must be licenced. The Radiological Advisory Council advises the Minister for Health on the granting of licences and registration. The Council is assisted by a number of sub-committees which are listed below. The members of the Council are :

Dr D. D. Letham (Chairman)
Professor C. J. B. Clews
Professor W. J. Simmonds
Professor D. J. Allen-Williams
Mr R. M. Hillman
Dr P. Breidahl

Meetings of the Council and its sub-committees held during 1967 were as follows:

Radiological Advisory Council	....	....	....	....	....	4
Medical Advisory Sub-committee	....	....	....	....	....	4
Dental Advisory Sub-Committee	....	....	....	....	....	0
Training and Instruction Sub-Committee	....	....	....	....	....	1

Laboratory personnel are appointed as Secretaries to the above bodies, and the Laboratory provides the technical and administrative facilities for the implementation of the Act.

Licences, once granted, must be renewed annually. Registration continues until cancelled by the Minister. In 1965, the Council adopted minimum standards which equipment must meet if it is to be considered for registration. There are separate standards for medical and dental installations.

Particulars of Licences and Registration

Licences—

Licences current at 31/12/67	....	....	....	....	....	174
New licence applications received during 1967	....	....	....	....	....	20
New licences granted during 1967—						
(a) Medical	....	....	....	....	....	3
(b) Non-Medical	....	....	....	....	....	12
Licences terminated 1967	....	....	....	....	....	5

Registrations—

Registrations Approved during 1967—						
(a) Medical	....	....	....	....	....	9
(b) Dental	....	....	....	....	....	33
Total Registrations current on 31/12/67—						
(a) Medical	....	....	....	....	....	38
(b) Dental	....	....	....	....	....	158

Training of Industrial Radiographers

During 1967, the Council initiated a system of approval of Industrial Radiographers who carry out gamma-radiography at field sites away from their licenced premises. Radiographers who could not satisfy the Council that they had an adequate knowledge of radiation safety, gained either through long experience or by training, were required to enrol in a course which was organised with the co-operation of the W.A. Institute of Technology. Those who completed the course satisfactorily were awarded a certificate by the Institute, and were granted approval by the Council. Ten completed the 1967 course and received a certificate. A further course is to be held in 1968.

Training of Maintenance Technicians and Engineers

There have been a number of incidents coming to the notice of Council in recent years in which workers concerned with installation and maintenance of X-ray equipment and equipment incorporating radioactive substances have been exposed to large doses of radiation. The Council was aware of the lack of knowledge of Radiation Safety of many of the persons engaged in these occupations and decided that courses of training should be provided. This is being discussed with the Institute of Technology and it is expected that the first course will be held in 1968.

CODES OF PRACTICE

The following codes of practice and publications issued by the National Health & Medical Research Council are distributed by the Laboratory to Licencees and Registrants :

Radiation Protection Standards

Code of Practice for the Use of Ionizing Radiation in Secondary Schools
Code of Practice for the Control and Safe Handling of Sealed Radioactive Sources used in Radiation Therapy
Code of Practice for Nursing Staff Exposed to Ionizing Radiations from Radioactive Substances
Safe Handling of Corpses Containing Radioactive Substances.

LABORATORY SERVICES

Film Badge Monitoring Service

The Regulations require that all persons who may be exposed to radiation must use some form of personnel monitoring. The Film Badge Service conducted by the Laboratory was established eleven years ago and is used by the majority of radiation workers in the State.

In 1967, 12,792 monitoring films were processed and the doses evaluated. The number of persons monitored at 31st December, was 1,060, an increase of 20 per cent. over the figure for 1966. This number was made up as follows :

Number of Persons Monitored—						
Medical, Hospitals	....	....	....	....	....	226
Medical, General Practitioners	....	....	....	....	....	88
Medical, Radiologists and Miscellaneous	....	....	....	....	....	77
Chiropractors	....	....	....	....	....	9
Dental	....	....	....	....	....	497
Non-Medical	....	....	....	....	....	163

The trend in the number of monitoring films processed and the number of persons monitored is shown in Figure 1.

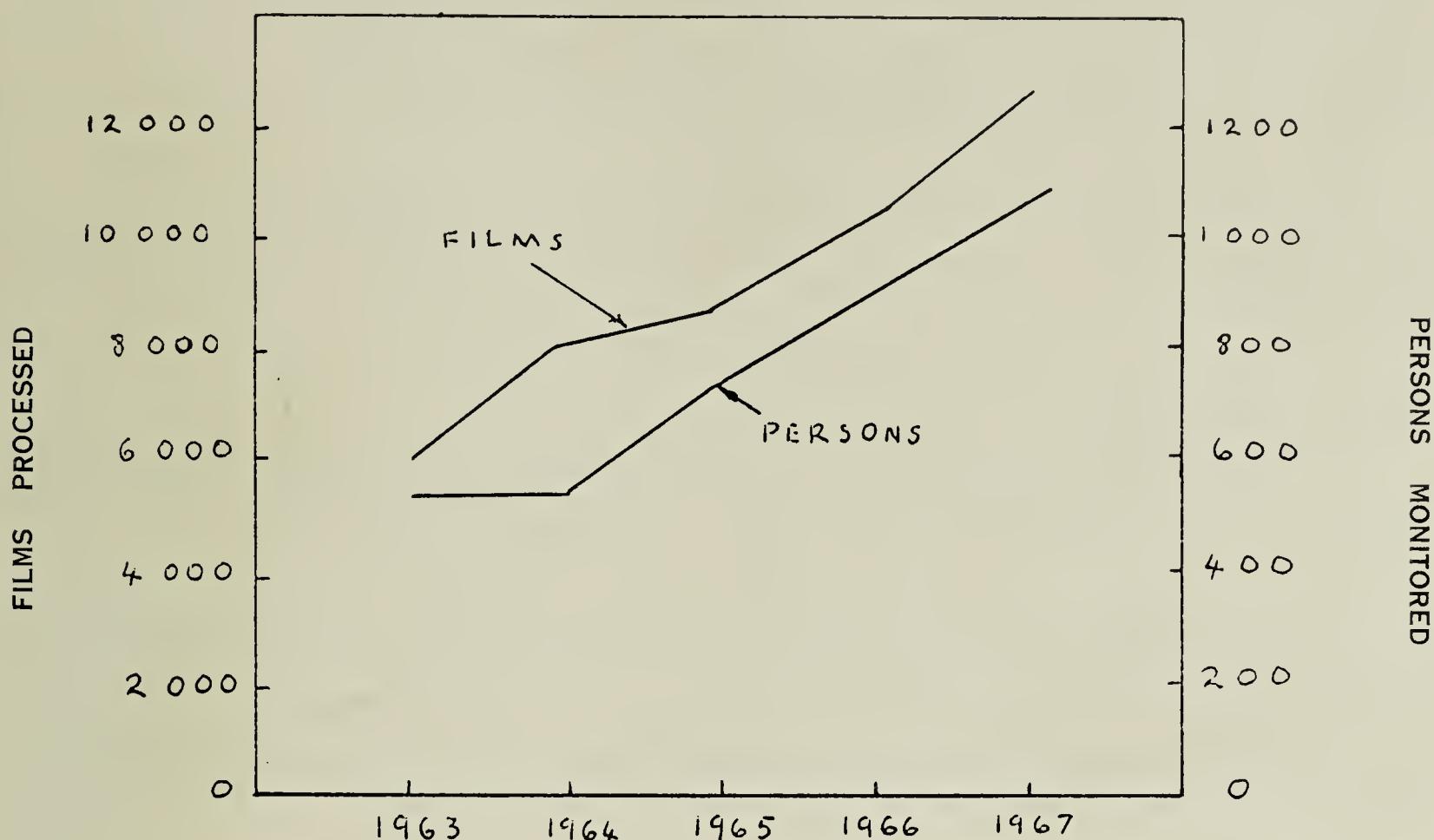


FIGURE 1.

The majority of films are worn for a period of four weeks. Where higher dose levels are anticipated periods of one or two weeks are required.

Following an enquiry received from a user of the film badge service, the Council decided that, in conformity with international recommendations, individual exposure records shall be kept for 30 years after the last entry. As difficulties were already being encountered in maintaining the exposure records at the Laboratory and in storing the increasing volume of paper which constituted them, investigations were begun into the feasibility of using a microfilm system. At an early stage it was apparent that such a system would improve the accessibility of the data, increase accuracy, reduce staff commitment, and greatly reduce record storage space. Accordingly, it is intended to introduce the system in 1968.

Inspection Services

There is a continuing programme of inspection of installations of new applicants for licences and registration and of re-inspection of those already licensed or registered. The purpose of an inspection is to ensure compliance with the Act, Regulations and the Council's Standards. Reports of inspections are submitted to the Council and where appropriate, recommendations made for correction of defects.

Inspections, 1967

Dental	....	....	....	....	....	....	....	66
Medical	....	....	....	....	....	....	....	57
Veterinarians	....	....	....	....	....	....	....	9
Chiropractors	....	....	....	....	....	....	....	5
Industrial and other non-medical	....	....	....	....	....	....	....	32

A number of inspections which could not readily be classified were also carried out. These included inspection of packages at the Customs Department and inspection of various types of Industrial apparatus and Medical and Dental X-ray equipment at the Laboratory.

Technical Information and Radiation Protection

Frequent requests for advice on radiation hazards, design of protective equipment, applications of radioactive substances and X-rays are dealt with at the Laboratory. The design of radiation protection for new or altered medical X-ray facilities is undertaken regularly.

Radiation Standards

The Laboratory's sub-standard X-ray dosimeter is used for the calibration of radiation measuring equipment and for the calibration of superficial therapy X-ray equipment. Five of the latter calibrations were carried out during 1967.

The Laboratory maintains a number of calibrated radioactive sources which are used for the calibration of (1) equipment used for measurement of radioactivity and (2) survey equipment and monitoring films.

The number of calibrations of monitoring and survey equipment will increase sharply in 1968 as the Radiological Advisory Council now requires radiation monitoring survey instruments etc., to be calibrated at regular intervals.

Radiation Monitoring Equipment

The laboratory is equipped with a range of monitoring and survey instruments for the field measurement of α , β and γ radiation.

Measurement of Radioactivity

Measurements of radioactivity in the environment were suspended in the latter part of 1967 due to the commencement of building additions. Measurements are expected to resume in 1968.

Radiation in the Environment

There are a number of sources of radiation of natural origins to which man is exposed :

1. Cosmic radiation
2. Gamma radiation from radioactive substances occurring naturally in the environment.

These result in external radiation, but internal radiation also results from the ingestion of foodstuffs and water containing naturally occurring radioactive substances. To these must be added the internal and external radiation resulting from the continued deposition of fallout.

Present contamination of the environment is not great, but it is considered essential that the levels of background radiation be established accurately before further increase occurs. Increases may result from the use of nuclear reactors for propulsion, power generation, distillation of water as well as nuclear explosions used for peaceful purposes. Without previous measurements having been made it is not possible to detect increases in environmental contamination. A program of measurement of background gamma radiation in the Western Australian environment has been commenced and will continue in 1968.

Luminous Watches and Clocks

In order to assist the Radiological Advisory Council in determining limits for exemption from the Regulations of luminous watches and clocks, the Laboratory carried out an extensive survey of the Radioactivity present in watches and clocks on sale in Western Australia. This survey showed that the average quantity of radium used in luminising a watch was $0.02 \mu\text{Ci}$, a significant reduction on previously reported values.

Dental X-ray Cone

In radiography, the use of the smallest possible X-ray beam results in a significant reduction of the doses delivered to the patient and received by the operator. In co-operation with several members of the dental profession, a rectangular, open-ended X-ray cone is being developed. Prototypes have been constructed and extensive trials carried out in dental surgeries. The new cone greatly reduces the area of the patient's skin which is irradiated.

Mass Miniature Chest Radiography—Gonad Dose Survey

At the request of the Director of the T.B. Control Branch, a survey of the gonad doses received in mass miniature chest radiography was initiated. The survey will continue in 1968.

Staff

The staff of the Physics Division consists of the Officer-in-Charge, two physicists, Radiation Technologist, a technician, and a part-time inspector. In August, Senior Radiation Officer D. B. Yeates was granted leave to undertake a course in Radiation Protection at the University of Surrey.

Education

1. Radiographers

Laboratory staff are responsible for the teaching of Radiographic Equipment A, one of the subjects in the three years course of training for diagnostic radiographers.

2. Nurses

A series of three lectures on Radioactive Substances and protection are given twice yearly to final year trainee nurses at the Sir Charles Gairdner Hospital.

3. Health and Factory Inspectors

Trainee Health and Factory Inspectors as well as qualified Health Inspectors are instructed on X-rays, radioactive substances and protection as part of their course. Notes for correspondence students have also been prepared.

4. Industrial Radiographers

Laboratory personnel gave a number of the lectures in the new course on Radiation Safety for Industrial Radiographers.

5. Medical Students

The Physicist-in-Charge lectured to fifth year medical students on the Uses and Hazards of Radiation.

Lectures

1. Institution of Engineers

Topic : " Ionising Radiation, the Engineer's Responsibility "

Lecturer : B. E. King

2. Dental Study Groups

(a) Topic : " Rectangular Cone Radiography "

Lecturer : L. M. Davies

(b) Topic : " The Radiation Hazard "

Lecturer : B. E. King

3. Royal Australian Chemical Institute

Topic : " Applications of Radiation in Analytical Chemistry "

Lecturer : L. M. Davies

4. W.A. Institute of Technology, Staff Seminar

Topic : " Applications of Radiation in Industry "

Lecturer : L. M. Davies

Civil Defence

Laboratory staff continue to assist the Civil Defence organisation by lecturing on Radiological Aspects of Civil Defence and advising the organisation on specific questions concerned with monitoring and radiation protection.

Appendix XIII

Activities of General and Meat Inspection Branches

A. A. Pilbeam, Chief Inspector

General Sanitation Report

Rapid increases in commitments placed upon the Inspection Branch of the Public Health Department during 1967, have far outstripped the capabilities of the limited trained staff which is available to cope with these requirements. Serious shortages exist in all sections of the General and Meat Inspection staffs. These deficiencies are reaching a level where it will be impossible to maintain satisfactory standards within the Inspection Services. The standard of efficiency provided by the existing General Staff continued to improve, but increased responsibilities seriously reduced the overall productive results of the Section. Research and more concentrated interests in selected and important aspects of Public Health received close attention during 1967.

North-West Health Inspection Services

Changes in personnel occurred during the year and more direct control became evident as Departmental officers were appointed to fill the positions for a period of not less than two years.

West Kimberley Regional Group

This Regional Group is now controlled by Mr R. L. Moss, who is based at Derby.

Pilbara Regional Group

Mr K. Watt now handles the affairs of this district and is centred at Port Hedland.

North-West Inland Areas

Regular inspections throughout the year are made, departmentally, by Mr S. Kennedy. The towns of Wittenoom, Tom Price, Nullagine, Mt Newman and Marble Bar receive attention.

Exmouth (North West Cape)

Changes in Health Inspections Services occurred in the Shire of Exmouth during 1967. Mr V. Buchanan, Health Inspector to the Shire was appointed to the American Base at a much more lucrative salary than that received from the Shire of Exmouth. His position is now occupied by Mr Welsh.

Rubbish Report

Co-operation with local authorities, through the system of the established Zone Committees which have been functioning for some considerable time, was the keynote of the progress so evident in this field during 1967. Mr Slattery continues to accept and resolve the many problems associated with these important aspects of environmental sanitation.

Sub-division of Land

The year's activities were as follows :—

Proposals for sub-division	....	....	....	....	572
Country proposals for sub-division	....	....	....	....	23
State Housing Commission	....	....	....	....	14
Area surveys	....	....	....	....	31
Appeals	....	....	....	....	19
Taxation Department	....	....	....	....	22
Public Works Department	....	....	....	....	6
General enquiries, Local Authorities, Land Agents, etc.	....	....	....	....	421
					1,108

Area surveys during this year included proposals for provision of local deep sewerage schemes at local authority level or private proposers.

Royal Show

Progress relating to general improvements at the Royal Show was again evident. Special attention was directed to the control of food handling premises where a system of registration, consistent with approved standards, was adopted. The results were quite effective and were accomplished with the full co-operation of the Royal Agriculture Society.

Fly Control

The annual Fly Control Campaign operated as usual. A total number of 41,073 premises were visited. Altogether, 2,852 fly breeding places were detected. A total of 16 Local Authorities participated and 43 university students were employed over a period of from 4 to 10 weeks each. Information relating to the effectiveness of the Fly Control Campaign is shown at Table "A".

Mosquito Control

Control and eradication measures were carried out during the year in a number of selected premises and places.

Pest Control

The Pest Control Section maintained its valuable contribution towards improved environmental sanitation. The continued support of the Officer-in-Charge, Mr J. Fowler and his staff, is most appreciated.

Specific functions covered the following items

- (1) Experimental work relating to fly control in skin sheds and poultry farms.
- (2) Sixty-four routine pest control treatments of Government properties were carried out.
- (3) 120 inspections at abattoir properties, with reference to fly control, received attention.
- (4) Inspections at the Subiaco and Swanbourne Sewage Treatment Works numbered 64 for the year. Total treatments for the year were 707.
- (5) Lectures and demonstrations on Fly Control to university students were carried out.
- (6) Lectures to Health Inspectors and Country Liaison Groups on pesticides were effected.
- (7) Experiments on caged wild rats using "Raticate" rat bait were undertaken.
- (8) The collection of water snails for use in research at the Department of Parasitology, Sydney University, was continued.

Item	Animal Control		Pest Control Treatments													
	Rodent	Cat	Cockroach	Fly	Termite	Midge	Ant	Flea	Mosquito	Silver Fish	Bed Bug	Spider	Pigeon Mite	Bee	Lice	Drug Store Beetle
No. Cases																
1967	237	10	189	94	74	18	17	16	19	8	6	6	9	2	1	1
1966	268	12	199	78	86	19	29	13	6	11	...	5	5	...	...	...

Septic Tanks

Total applications received	....	....	....	....	....	10,425
Total combined systems	....	....	....	....	....	9,143
Total separate systems	....	....	....	....	....	1,282

These figures show a considerable increase over the applications which were submitted and approved for the year 1966.

Six Pint Flushing Systems

A total of 42 six pint cisterns were examined and passed by the General Inspection Branch. 136 six pint pans were similarly treated.

Inspection of Imported Fish and Food at Fremantle Wharf

A total weight of 1,542 tons of imported frozen fish was examined and passed for sale to the public. Increased imports of foodstuffs into Western Australia continued to become more evident. A system of recording details relating to foodstuffs received at Fremantle Wharf was adopted and has continued to function with satisfactory results. Limited sampling of food was introduced during the year and some interesting results in this field were observed.

Routine Food and Water Sampling

Food	....	....	....	....	....	....	74
Miscellaneous	....	....	....	....	....	....	34
Reservoirs	....	....	....	....	....	....	64
Swimming Pools	....	....	....	....	....	....	91
Ocean Beaches	....	....	....	....	....	....	780
<hr/>							
Totals	....	....	....	....	....	....	1,043

General Inspections

Towns—59, including hospitals and special inspections.

This important aspect of environmental sanitation is being neglected more each year, as specific items and problems absorb the time and energies of the inadequate, trained staff. It is most essential that routine country inspections should continue at a high level and adequate provisions will need to be made available to perform this function.

Special Projects

Several special projects which commenced during 1966 continued towards completion.

Further undertakings were as follows :—

- (1) A liaison with relevant Local Authority interests was formed to formulate methods of disposing of rubbish in country districts. The group was centred at Bunbury and will function on similar lines to those already operating with the Metropolitan Rubbish Control Planning Committee.
- (2) Meetings were arranged with representatives of the septic tank industry to consider draft forms of the new Septic Tank Regulations.
- (3) Crayfish processing works throughout the State were closely examined and conditions were considerably improved.

Health Inspectors' Country Liaison Groups

These groups continued to meet and function at very regular intervals and were well attended on all occasions. It is apparent that this aspect of Departmental communication on technical matters at Local Authority level, is now an accepted fact.

Annual Health Inspectors' Conference, 1967

This year's Conference was held at Perry Lakes Stadium, Floreat Park, and was quite successful. An interesting feature of the Conference was the introduction of an exhibition which was held conjointly with the Conference. Exhibits were provided by local representatives and distributors of various companies associated with environmental sanitation and public health. Their assistance and ready co-operation in making the exhibition a success was most appreciated.

Meat Inspection

The affairs of the Meat Inspection continued to function satisfactorily, although it was again evident that insufficient staff was available to properly man the abattoirs—particularly Robbs Jetty. Figures relating to Meat Inspection details are shown at Appendix "XXI".

Table A

METROPOLITAN FLY CAMPAIGN 1967/68—SUMMARY OF RESULTS

Local Authority	No. of students employed	Time of employment (in weeks)	No. of Premises visited	No. of Premises where breeding detected	No. of breeding places found	Rubbish Bins	Buried food wastes	Poultry keeping	In-cinera-tors	Com-post heaps	Mulch	Animal manure	Fowl Manure	Lawn clip-pings	Others
City of Fremantle	4	32	5,772	207	121	14	16	7	1	7	1	...
Shire of Peppermint Grove	1	4	382	7	1	...	...	8	...	...	23	...
Shire of Cockburn	1	6	1,124	173	189	10	14	2	1	1	1	5
Shire of Canning	2	8	1,234	56	28	5	4	...	1	2	...	...
City of Nedlands	3	12	1,682	94	43	7	...	4	11	...	14	...
Shire of Perth	5	37	4,264	530	554	233	68	22	19	...	21	...
City of South Perth	6	24	4,714	229	229	110	4	17	4	4	23	7
Shire of Bayswater	3	18	2,120	126	143	33	6	47	6	4	39	...
Town of Cottesloe	4	16	2,112	111	128	49	10	4	11	1	39	...
Shire of Swan/Guildford	1	17	1,782	119	119	59	12	2	11	1	2	...
Town of Midland	1	6	1,339	169	191	74	21	21	5	5	6	...
Shire of Bassendean	1	6	1,046	70	70	40	4	6	3	3	12	...
City of Subiaco	2	16	3,274	125	125	29	5	7	3	4	1	5
Shire of Belmont	4	50	5,676	326	330	104	41	34	9	6	1	40
City of Perth	3	27	2,559	274	274	104	23	22	7	10	1	107
	41	279	39,080	2,616	2,718	1,038	230	217	78	66	147	10	97	123	705
Town of Geraldton	2	10	1,993	236	604	139	39	267	5	115	17	7
														1	9
														1	1

FLY CAMPAIGN 1967/68

Comparison with 1966/67

Local Authority	Number of Premises Visited		Number of Houses Breeding Flies		Percentage of Houses Breeding Flies	
	1966/67	1967/68	1966/67	1967/68	1966/67	1967/68
<i>Metropolitan—</i>						
Shire of Bayswater	2,536	2,120	445	126	17.5	5.9
Shire of Bassendean	611	1,046	26	70	4.3	6.7
Shire of Belmont	6,951	5,676	351	326	5.05	5.7
Shire of Canning	869	1,234	190	56	21.9	4.5
Shire of Cockburn	789	1,124	66	173	8.4	15.4
Town of Cottesloe	2,199	2,112	149	111	6.8	5.2
City of Fremantle	6,579	5,772	189	207	2.8	3.4
Town of Midland	1,339	...	...	169	...	12.6
City of Nedlands	1,634	1,682	116	94	7.09	5.6
City of Perth	2,001	2,559	126	274	6.2	10.7
Shire of Peppermint Grove	415	382	29	7	7.0	1.8
Shire of Perth	3,801	4,264	364	530	9.6	12.4
City of South Perth	3,377	4,714	343	229	10.3	4.8
City of Subiaco	948	3,274	203	125	21.4	3.8
Shire of Swan/Guildford	1,198	1,782	77	119	8.0	6.7
<i>Country—</i>						
Town of Geraldton	...	...	1,993	...	236	...
						11.8

METROPOLITAN BREEDING RATE

	%									
1966/67	7.8									
1967/68	6.7									

Appendix XIV

Public Buildings Section Report

R. T. Dunstan, Senior Inspector

This section administers Part VI of the Health Act, (Public Buildings), the Health Act, (Swimming Pools) Regulations, 1964 and the Health, 1911 Private Hospitals Regulations through-out the whole of the State.

The section has had another busy year, plans and specification of 337 projects having an estimated total cost of \$13,654,841.00 have been examined and approved. These buildings include civic centres, public halls, assembly halls, theatres, churches, hospitals, schools, grandstands, public swimming pools and recreation club buildings.

The construction and fitting-up of these buildings, including the electrical installations have been supervised by this section.

Routine surveys have been made of various country swimming pools including the north-west area to determine—

- (a) Whether the swimming pool water treatment has been properly maintained.
- (b) Whether the electric lighting is of the intensity required by the regulations.

Advice has been given to Shire Councils, Swimming Pool designers and Swimming Pool Managers on design, amenities requirements, filtration and chemical treatment of water.

At the request of the Local Authorities Swimming Pool Conference a lecture was given by an officer of this section to members of the conference comprising representatives of Shire Councils and swimming pool managers on 22nd September, 1967. The talk was based on the desirable features of a swimming pool with particular reference to chlorination and filtration. A comparison was made of the relative merits of water in an approved pool compared with river water and ocean beaches ; also pool hygiene.

A further request from the Local Authorities Swimming Pool Conference was acceded to with reference to assistance required in establishing a course for "Swimming pool managers' Certificate of competency". Officers of this Section have consented to give lectures to students in swimming management classes, or if necessary by correspondence, on the subjects of—

1. "Purification and clarity of water and hygiene."
2. "Swimming Pools (Health Act) Regulations."

Inspections

Regular inspections have been made of public buildings to see that they meet with the requirements of the Public Buildings Regulations with respect to structural stability, ventilation, toilet requirements, sanitation, and the electrical installation. The Royal Agricultural showgrounds buildings at Claremont are inspected annually by this section and several improvements have been achieved.

Appendix XV

Royal Perth, Fremantle and Princess Margaret Hospitals
ALL PATIENTS DISCHARGED

Hospital	Year	Number of Cases	Total Days Stay in Hospital	Average Number of Days in Hospital	Daily Bed Average
Fremantle Hospital	1965	8,961	81,986	9.1	224.5
	1966	8,373	84,917	10.1	232.6
	1967	8,321	81,462	9.8	223.2
Princess Margaret Hospital	1965	7,888	54,227	6.9	148.5
	1966	7,699	53,549	6.9	146.7
	1967	7,937	55,397	7.0	151.8
Royal Perth Hospital	1965	14,677	259,433	17.7	710.3
	1966	14,974	263,395	17.6	721.6
	1967	15,765	266,053	16.9	728.9

OPERATION CASES

Hospital	Year	Number of Cases	Total Days Stay	Average	Daily
Fremantle Hospital	1965	5,263	48,768	9.3	133.6
	1966	4,603	44,219	9.6	121.1
	1967	4,702	41,353	8.8	113.3
Princess Margaret Hospital	1965	2,537	19,497	7.7	53.4
	1966	2,596	19,826	7.6	54.3
	1967	2,547	19,554	7.7	53.6
Royal Perth Hospital	1965	7,085	142,698	20.1	390.7
	1966	7,609	150,449	19.8	412.2
	1967	7,843	155,789	19.9	426.8

ACCIDENTS, POISONING AND VIOLENCE

Hospital	Year	Number of Cases	Total Days Stay in Hospital	Percentage of Total Hospital Beds Occupied	Number Died
Fremantle Hospital	1965	1,755	18,339	22.37	25
	1966	1,531	18,923	22.28	18
	1967	1,453	16,746	20.56	27
Princess Margaret Hospital	1965	1,598	9,122	16.82	8
	1966	1,684	8,313	15.52	5
	1967	1,652	8,131	14.68	7
Royal Perth Hospital	1965	3,219	64,908	25.02	91
	1966	3,556	59,440	22.57	99
	1967	4,301	65,269	24.53	111

King Edward Memorial and Sir Charles Gairdner Hospitals

ALL PATIENTS DISCHARGED

Hospital	Year	Number of Cases	Total Days Stay in Hospital	Average Number of Days in Hospital	Daily Bed Average
King Edward Memorial Hospital	1965	4,969	43,433	8.7	118.9
	1966	5,215	46,436	8.9	127.2
	1967	5,186	45,439	8.8	124.5
Sir Charles Gairdner Hospital	1965	2,386	57,239	24.0	156.7
	1966	3,877	76,683	19.8	210.1
	1967	3,562	74,227	20.8	203.4

King Edward Memorial and Sir Charles Gairdner Hospitals, (continued)

OPERATION CASES

King Edward Memorial Hospital ....	....	....	....	1965	1,254	12,325	9·8	33·7
				1966	2,362	22,860	9·7	62·6
				1967	2,535	23,959	9·4	65·6
Sir Charles Gairdner Hospital	....	....	....	1965	738	16,252	22·0	44·5
				1966	1,419	28,037	19·8	76·8
				1967	1,398	29,412	21·0	80·6

ACCIDENTS, POISONINGS, AND VIOLENCE

Hospital				Year	Number Of Cases	Total Days Stay in Hospital	Percent of Total Hospital Beds Occupied	Number Died
King Edward Memorial Hospital ....	....	....	....	1965	12	106	0·24	....
				1966	10	51	0·11	....
				1967	17	84	0·19	....
Sir Charles Gairdner Hospital	....	....	....	1965	66	659	1·15	2
				1966	167	2,199	2·86	3
				1967	265	3,571	6·24	8

Royal Perth, Fremantle, Princess Margaret, Sir Charles Gairdner and King Edward Memorial Hospitals

ALL PATIENTS DISCHARGED, 1967, IN AGE GROUPS

Age Groups	Number of Cases		Per cent. of Total		Total Days Stay in Hospital		Per cent. of Grand Total		Average No. of Days in Hospital	
	M	F	M	F	M	F	M	F	M	F
00-14	6,217	4,264	15·10	10·48	42,001	30,139	8·04	5·77	6·76	7·07
15-19	1,159	1,983	2·85	4·87	11,599	16,476	2·22	3·15	10·01	8·31
20-29	1,949	4,226	4·79	10·38	21,383	35,239	4·09	6·74	10·97	10·70
30-39	1,537	2,323	3·78	5·71	20,201	23,611	3·87	4·52	13·14	10·16
40-49	1,666	1,789	4·08	4·40	26,305	23,734	5·03	4·54	15·79	13·27
50-59	1,991	1,733	4·89	4·26	35,355	32,988	6·77	6·31	17·76	19·04
60-69	2,401	2,264	5·90	5·56	47,767	44,034	9·14	8·43	19·89	19·45
70 and over	2,271	2,967	5·58	7·29	46,309	65,114	8·86	12·46	20·39	21·95
Not Known	11	20	0·03	0·05	79	244	0·02	0·05	7·18	12·20
Total	19,202	21,569	47·00	53·00	250,999	271,579	48·04	51·96	13·07	12·59
Total Male and Female	40,701		100		522,578		100		12·84	

Daily Bed Average—1,431·72

Royal Perth, Fremantle, Princess Margaret, Sir Charles Gairdner and King Edward Memorial Hospitals

OPERATION CASES IN AGE GROUPS, 1967

Age Groups	Number of Cases		Per cent. of Total		Total Days Stay in Hospital		Per cent. of Grand Total		Average No. of Days in Hospital	
	M	F	M	F	M	F	M	F	M	F
00-14	2,350	1,631	5·77	4·01	15,532	10,689	2·97	2·05	6·61	6·55
15-19	640	980	1·57	2·41	7,763	9,753	1·49	1·87	12·13	9·95
20-29	1,061	2,033	2·61	5·00	15,176	18,822	2·90	3·60	14·30	9·26
30-39	820	1,196	2·01	2·94	11,489	13,891	2·20	2·66	14·01	11·61
40-49	820	967	2·01	2·38	15,364	13,230	2·94	2·53	18·74	13·68
50-59	980	968	2·41	2·38	14,929	20,204	2·86	3·87	15·23	20·87
60-69	1,123	1,143	2·76	2·81	24,121	23,285	4·62	4·46	21·48	20·37
70 and over	1,029	1,277	2·53	3·14	24,590	31,326	4·71	5·99	23·90	24·53
Not Known	2	5	0·00	0·01	19	84	0·00	0·02	9·50	16·80
Total	8,825	10,200	21·68	25·06	128,983	141,284	24·68	27·05	14·62	13·85
Total Male and Female	19,025		46·74		270,267		51·73		14·21	

Daily Bed Average—740·46

PATIENTS DISCHARGED DURING 1967

Item	Disease	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total		Average Number Days in Hospital		Average Age of Patients		Sex		Results*				
		International Classification Categories	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	1	2	3	4	5	
														Male	Female	Male	Female	
1	Tuberculosis—All Forms	001-019	106	62	8,916	5,109	1.71	0.98	84.11	82.40	52	48	M	2	89	8	4	3
2	Syphilis, Gonorrhoea and other Venereal Diseases	020-039	9	14	38	153	0.01	0.03	4.22	10.93	42	25	F	...	54	4	2	2
3	Other Infectious Diseases	040-138	480	413	4,289	3,747	0.82	0.72	8.94	9.07	14	18	M	...	447	10	...	1
4	Malignant Neoplasms, including those of Lymphatic and Haemopoietic Systems	140-205	980	1,027	21,039	21,027	9.03	4.02	21.47	20.47	59	59	M	2	28	9	...	5
5	Benign and Unspecified Neoplasms	210-239	181	405	1,719	4,262	0.33	0.82	9.50	10.52	34	40	M	...	148	10	4	10
6	Allergic Disorders	240-245	367	469	2,396	4,390	0.46	0.84	6.53	9.36	22	31	M	2	321	12	14	14
7	Diseases of Thyroid Gland	250-254	19	75	225	1,331	0.04	0.25	11.84	17.75	47	47	M	...	351	7	6	6
8	Diabetes Mellitus	260	110	137	1,619	3,210	0.31	0.61	14.72	23.43	45	54	M	...	446	17	...	4
9	Diseases of other Endocrine Glands	270-277	24	44	395	798	0.08	0.15	16.46	18.14	28	41	M	...	61	3	13	13
10	Avitaminoses and other Metabolic Diseases	280-289	67	68	1,339	1,138	0.26	0.22	19.99	16.74	41	40	M	...	93	6	10	10
11	Diseases of Blood Forming Organs and Blood	290-299	151	147	1,804	1,870	0.35	0.36	11.95	12.72	31	48	M	...	114	10	1	11
12	Mental Psychoneurotic and Personality Disorders	300-326	501	585	8,104	9,946	1.55	1.90	16.18	17.00	41	42	M	2	54	5	8	7
13	Vascular Lesions Affecting Central Nervous System	330-334	321	321	8,429	11,058	1.67	2.12	26.26	34.45	63	66	M	...	122	20	1	8
14	Inflammatory and other Diseases of Central Nervous System	340-357	391	313	6,591	5,743	1.27	1.10	16.86	18.35	33	41	M	...	189	35	...	93
15	Diseases of Nervous and Peripheral Ganglia	360-369	73	75	1,218	1,034	0.23	0.20	16.68	13.79	49	50	M	4	13	1	1	1
16	Diseases of the eye....	370-389	503	503	5,028	5,401	0.96	1.03	10.00	10.74	39	46	M	...	273	78	14	14
17	Diseases of Ear and Mastoid Process	390-398	275	276	1,568	1,561	0.30	0.30	5.70	5.66	17	28	M	...	213	69	15	13
18	Rheumatic Fever and Chronic Rheumatic Heart Disease	400-416	118	125	2,452	2,216	0.47	0.42	20.78	17.73	29	31	M	1	89	17	5	6
19	Diseases of the Heart and Arteries Including Hypertension and Arteriosclerosis	420-456	1,158	866	22,393	17,392	4.29	3.33	19.34	20.08	61	66	M	...	826	12	10	180
															630	79	17	136

0	Diseases of Veins and other Diseases of Circulatory System	460-468	283	362	4,098	5,255	0·78	1·01	14·48	14·52	4·5	50	M	15	243	15	1	
1	Diseases of Respiratory System	470-527	2,067	1,536	17,314	12,126	3·31	2·32	8·38	7·89	27	24	M	24	309	18	...	
2	Diseases of Buccal Cavity and Oesophagus	530-539	226	241	931	720	0·18	0·14	4·12	2·99	26	24	M	57	157	61	60	
3	Diseases of Stomach and Duodenum	540-545	265	160	4,181	2,487	0·80	0·48	15·78	15·54	52	52	M	79	154	37	1	
4	Appendicitis	550-553	377	277	2,729	2,024	0·52	0·39	7·24	7·31	22	23	M	140	234	2	...	
5	Hernia of Abdominal Cavity	560-561	305	155	2,963	1,838	0·57	0·35	9·71	11·86	43	54	M	20	88	189	...	
6	Other Diseases of Intestines and Peritoneum	570-578	513	564	5,496	7,368	1·05	1·41	10·71	13·06	23	34	M	22	459	12	5	
7	Diseases of Liver and Gall Bladder	580-586	175	352	3,109	5,977	0·59	1·14	17·77	16·98	58	57	M	25	123	16	1	
8	Diseases of Pancreas	587	45	29	880	600	0·17	0·11	19·56	20·69	35	44	M	49	268	22	2	
9	Nephritis and Nephrosis	590-594	110	87	1,541	1,246	0·29	0·24	14·01	14·32	19	27	M	1	97	7	1	
10	Other Diseases of Urinary System	600-609	293	438	3,149	5,507	0·60	1·05	10·75	12·57	43	37	M	3	74	5	1	
11	Diseases of Male Genital Organs	610-617	416	...	5,571	...	1·07	...	13·39	...	47	...	M	24	128	25	16	
12	Diseases of Breast	620-621	1	46	2	231	0·00	0·04	2·00	5·03	22	47	M	7	345	45	12	
13	Diseases of Female Genital Organs, Uterus, Ovary, Fallopian Tubes, Parametrium	622-637	...	1,103	...	7,778	...	1·49	...	7·05	...	39	M	83	19	12	12	
14	Complications of Pregnancy	640-649	...	834	...	3,651	...	0·70	...	4·38	...	25	M	27	801	3	12	
15	Abortion	...	...	650-652	...	461	...	1,627	...	0·31	...	27	M	112	342	2	12
16	Delivery Without Mention of Complication	660	...	2,851	...	28,167	...	5·39	...	9·88	...	25	M	...	2,851	...	12	
17	Delivery with Specified Complication	670-678	...	117	...	986	...	0·19	...	8·43	...	26	M	1	116	...	12	
18	Complications of the Puerperium	680-689	...	24	...	256	...	0·05	...	10·67	...	30	M	1	21	1	12	
19	Diseases of Skin and Cellular Tissue	690-716	423	352	6,306	5,080	1·21	0·97	14·91	14·43	34	38	M	30	373	16	4	
20	Arthritis and Rheumatism Except Rheumatic Fever	720-727	195	276	5,396	6,998	1·03	1·34	27·67	25·36	44	50	M	7	170	17	4	
21	Osteomyelitis and other Bone and Joint Diseases	730-738	353	201	4,871	2,828	0·93	0·54	13·80	14·07	33	39	M	7	331	13	3	
22	Other Diseases of Musculoskeletal System	740-749	187	258	3,303	6,645	0·63	1·27	17·66	25·76	32	47	M	1	163	23	4	
23	Congenital Malformations	750-759	360	287	4,712	3,984	0·90	0·76	13·09	13·88	9	10	M	8	262	82	4	
24	Birth Injuries, Asphyxia and Infections of Newborn	760-776	151	131	3,183	2,502	0·59	0·48	20·66	19·10	2	2	M	3	181	78	4	
25	Symptoms Referable to Systems or Organs	780-789	1,257	1,105	11,476	9,909	2·20	1·90	9·13	8·97	39	38	M	43	1,008	126	9	
26	Senility and Ill-Defined Diseases	790-795	136	231	1,659	3,877	0·32	0·74	12·20	16·78	46	48	M	3	864	112	2	
	Total	13,972	18,403	231,053	192,351	36·8	44·21	13·77	12·56	37	37				1,916	25,980	2,544	550

PATIENTS DISCHARGED DURING 1947—continued

Item	Disease	International Classification Categories	Number of Days in Hospital						Per cent. of Grand Total		Average Number of Days in Hospital		* Results						Sex		1		2		3		4		5					
			Number of Cases		Male		Female		Male		Female		Male		Female		Male		Female		Sex		1		2		3		4		5			
			Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	1	2	1	2	1	2	1	2						
47	Fractures of Face and Skull Bones	N800–N804	310	103	3,614	1,000	0.69	0.19	11.66	9.71	29	26	M	16	265	17	M	16	265	17	12	...	...	...	...	...	...	...	...	...	...
48	Fractures and Dislocations of Vertebral Column	N805–N806	96	32	3,899	1,002	0.75	0.19	40.61	31.31	36	44	F	3	94	4	F	3	94	4	2	...	...	...	...	...	...	...	...	...	...
49	Other Fractures of Trunk, Sternum, Larynx and Pelvis	N807–N809	97	58	1,739	1,149	0.32	0.22	17.93	19.81	48	52	M	1	82	13	F	1	82	13	1	...	...	...	...	...	...	...	...	...	...
50	Fractures of Upper Limb	...	N810–N819	464	318	3,451	2,319	0.66	0.44	7.44	7.29	22	32	M	3	26	4	F	3	26	4	4		
51	Fractures of Lower Limb	...	N820–N829	561	532	14,541	19,684	2.78	3.77	25.92	37.00	37	61	M	5	448	9	F	5	448	9	4		
52	Dislocation Without Fracture	...	N830–N839	83	41	833	391	0.16	0.07	10.04	9.54	28	36	M	5	311	3	F	5	311	3	15		
53	Sprains and Strains	...	N840–N848	136	41	1,111	324	0.21	0.06	8.17	7.90	32	36	M	5	21	3	F	5	21	3	35		
54	Head Injury (Excluding Skull Fracture)	N850–N856	1,441	571	9,247	3,163	1.77	0.61	6.42	5.54	28	28	M	4	36	4	F	4	36	4	2	...	...	...	...	...	...	...	...	...	...
55	Internal Injury of Chest, Abdomen and Pelvis	N860–N869	90	28	1,432	288	0.27	0.06	15.91	10.29	31	27	M	5	535	10	F	5	535	10	27	...	...	...	...	...	...	...	...	...	...
56	Lacerations, Contusions and Superficial Injuries	N870–N929	897	323	6,673	2,241	1.28	0.43	7.44	6.94	25	24	M	4	23	23	F	4	23	23	5	...	...	...	...	...	...	...	...	...	...
57	Effects of Foreign Body Entering through Orifice	N930–N936	95	93	443	227	0.08	0.04	4.66	2.44	31	33	M	5	860	8	F	5	860	8	1	...	...	...	...	...	...	...	...	...	...
58	Burns	...	N940–N949	200	115	4,036	1,098	0.77	0.37	20.18	16.59	20	16	M	6	305	5	F	6	305	5	1		
59	Injury to Nerves and Spinal Cord	N950–N959	32	10	1,489	48	0.29	0.01	46.53	4.80	34	37	M	2	191	3	F	2	191	3	4	...	...	...	...	...	...	...	...	...	...
60	Without Bone Injury	...	N960–N979	370	490	1,695	2,983	0.32	0.57	4.58	6.09	20	28	M	3	23	8	F	3	23	8	1		
61	Effects of Poisons	...	N980–N999	135	78	1,714	744	0.33	0.14	12.70	9.54	33	40	M	5	414	18	F	5	414	18	6		
	Total (N Categories)	...		5,007	2,833	55,917	37,471	10.71	7.17	13.23	28	34			388	7,106			388	7,106	5	148												
62	Investigations, observations and Aftercare	Y00–Y10	223	333	2,731	3,055	0.52	0.57	12.25	9.17	34	33	M	10	162	26	F	5	162	26	25	...	...	...	...	...	...	...	...	...	...
	Total (Y Categories)	...		223	333	2,731	3,055	0.52	0.57	12.25	9.17	34	33			15	430			15	430	51	60	
	Grand Total	...		19,202	21,569	250,999	271,579	48.04	51.93	13.07	12.59	34	37			2,319	33,516			2,319	33,516	2,788	615	1,533										

* Results : 1 — Cured
2 — Impaired
3 — Unchanged
4 — Investigation only
5 — Deaths

OPERATION CASES DISCHARGED, 1967

Item	Operation	Code of Surgical Operations	Number of Cases		Number of Days in Hospital		Per cent. of Total Oper'n Beds		Average Number Days in Hospital		Average Age of Patients		Sex	Results *					
			Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		1	2	3	4	5	
1	Neurosurgery, Brain and Cerebral Meninges	001-019	243	152	6,894	5,123	2.55	1.90	28.37	33.70	41	40	M	10	129	46	18	40	
2	Neurosurgery, Spinal Cord and Spinal Meninges	020-029	83	62	1,823	1,467	0.67	0.54	21.96	23.66	40	46	F	6	77	30	14	25	
3	Neurosurgery, Peripheral Nerves and Sympathetic System	030-049	53	32	1,080	755	0.40	0.28	20.38	19.36	47	45	M	4	54	14	4	7	
4	Thyroid and Parathyroid	070-079	16	48	215	753	0.08	0.28	13.44	15.69	47	49	F	1	44	12	4	4	
5	Adrenals	080-084	2	9	34	258	0.01	0.10	17.00	28.67	23	43	M	6	39	13	1	1	
6	Pituitary, Thymus and other Endocrine Organs	085-096	1	...	...	105	...	0.04	...	10.50	...	62	...	F	...	...	...	...
7	Ophthalmic Operations	100-199	475	455	5,697	5,351	2.11	1.98	11.99	11.76	37	45	M	57	376	38	1	3	
8	Ear, Nose and Throat	200-249	566	411	5,962	2,739	2.21	1.10	10.53	6.66	30	32	F	64	367	21	1	2	
9	Teeth and Gums	250-259	170	209	429	526	0.16	0.19	2.52	2.52	18	20	M	30	497	28	2	10	
10	Pharynx, Tongue, Palate and Buccal Cavity	260-299	532	583	2,894	2,642	1.07	0.98	5.44	4.53	20	20	F	32	351	17	4	7	
11	Heart and Pericardium and Intra-Thoracic Great Vessels	300-329	133	106	2,508	1,611	0.93	0.60	18.86	15.20	39	32	M	53	111	6	...	...
12	Lung, Bronchus and Mediastinum and Collapse Therapy	330-354	232	112	5,417	2,714	2.00	1.00	23.35	24.23	52	46	M	17	127	372	25	1	
13	Operations on Breast	380-389	1	155	2	2,807	0.00	1.04	2.00	18.11	22	55	M	125	171	394	10	1	
14	Operations on Abdominal Wall	400-419	401	280	5,843	5,081	2.16	1.88	14.57	18.15	42	51	M	7	125	25	8	13	
15	Operations on Stomach	420-439	127	59	2,343	1,301	0.87	0.48	18.45	22.05	45	47	F	5	129	6	2	7	
16	Operations on Appendix	440-449	377	316	2,698	2,332	1.00	0.86	7.16	7.38	22	22	M	6	318	17	3	21	
17	Operations on Intestines (Except Appendix and Rectum)	450-469	148	153	3,604	3,480	1.33	1.29	24.35	22.75	46	42	F	6	142	233	1	5	
18	Operation on Rectum and Anus	470-499	139	121	2,199	1,806	0.81	0.67	15.82	14.93	44	46	M	7	115	12	3	11	
19	Operation on Liver and Bile Ducts	500-529	116	263	5,042	0.87	1.87	20.35	19.17	57	56	F	7	116	20	3	7		
20	Operation on Pancreas	530-539	3	3	113	163	0.04	0.06	37.67	54.33	39	43	M	2	49	10	1	6	
21	Operation on Spleen	540-549	26	12	584	305	0.22	0.11	22.46	25.42	32	31	M	2	18	1	1	2	

OPERATION CASES DISCHARGED, 1967—continued

Item	Operation	Code of Surgical Operations	Number of Cases		Number of Days in Hospital		Per cent. of Total Oper'n Beds		Average Number Days in Hospital		Average Age of Patients		Sex	Results *					
			Male	Female	Male	Female	Male	Female	Male	Female	Male	Female		1	2	3	4		
22	Operation on Kidney and Ureter	600-639	260	180	4,434	3,534	1,64	1,31	17.05	19.63	44	41	M	15	202	6	10		
23	Operation on Bladder and Urethra	640-669	416	231	5,686	3,065	2.10	1.13	13.67	13.27	54	50	F	14	137	23	3		
24	Operation on Prostate and Seminal Vesicles	670-679	239	....	5,918	....	2.19	....	24.76	....	71	....	M	15	290	61	43	
25	Other Male Genital Organs	....	680-699	224	....	1,643	....	0.61	....	7.33	....	20	....	F	7	162	34	24
26	On Ovary and Fallopian Tubes	700-719	....	145	....	1,868	....	0.69	....	12.88	....	....	....	M	22	197	13	4
27	On Uterus and Supporting Structures	720-739	....	892	....	6,939	....	2.58	....	7.81	....	....	....	F	24	104	11	6
28	On Vagina, Vulva and Perineum	740-759	....	273	....	3,168	....	1.17	....	11.60	....	....	....	M	62	619	38	172
29	Obstetric Operations (D. and C.)	760-799	....	2,063	....	18,615	....	6.89	....	9.02	....	....	....	F	19	....	....	1
30	Orthopaedic Surgery	....	800-899	1,881	1,474	30,503	35,903	11.29	13.28	17.81	24.36	33	47	M	25	116	1,938	3
31	On Peripheral Blood Vessels and Lymphatic System	900-929	247	240	6,356	4,619	2.35	1.71	25.73	19.25	51	48	F	52	1,742	57	39		
32	On Skin and Subcutaneous Tissues	930-949	1,263	736	14,357	9,183	5.31	3.40	11.37	12.48	33	35	M	72	1,166	22	16		
33	Other Surgical Procedures...	....	950-999	451	425	7,271	8,104	2.69	3.00	16.21	19.07	39	45	F	71	654	7	12
														F	11	354	28	3	
	Total	8,825	10,200	128,983	141,284	47.72	52.28	14.62	13.85	36	38			1,761	15,428	974	405
	Grand Total	19,025	270,267	100	14.20	37	38			457			

* Operation cases occupied 51.72% of the total bed days. To find the percentage of total beds occupied by the various types of operation cases multiply the percentage figure in columns six and seven by the figure 0.517.

* Results : 1 — Cured
2 — Improved
3 — Unchanged
4 — Investigation only
5 — Death

ACCIDENTS, POISONINGS AND VIOLENCE, 1967

Accident	Category Inter- national Classifica- tion "E" Code	Number of Patients		Days in Hospital		Percentage of Hospital Beds Occupied		Average Age		Number Died	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Railway Accidents	800-802	22	3	401	167	0.08	40	66	2	13	37
Motor Vehicle Traffic Accidents	810-825	1,564	672	23,059	9,448	4.41	1.81	29	31	35	35
Motor Vehicle Non-Traffic Accidents	830-835	50	22	284	316	0.05	0.06	28	35	22	22
Other Road Vehicle Accidents	840-845	94	57	434	650	0.08	0.12	17	17	17	17
Water Transport Accidents	850-858	14	5	181	136	0.03	0.03	34	35	35	35
Aircraft Accidents	860-866	2	5	...	...	0.00	...	38	...	...	...
Accidental Poisoning	870-895	194	142	406	376	0.08	0.07	6	9	1	2
Accidental Falls	900-904	933	889	10,866	17,349	2.08	3.31	32	49	23	38
Other Accidents	910-936	1,231	521	11,181	3,680	2.14	0.70	25	26	8	3
Accidents Caused by Hot Substances, Corrosive or Steam	917	114	85	1,678	1,087	0.32	0.21	13	11	3	1
Medical and Surgical Complications and Therapeutic Misadventures	940-959	91	89	1,573	1,170	0.30	0.22	44	48	5	3
Late Effects of Injury	960-965	55	34	2,145	1,222	0.41	0.23	35	44	1	1
Suicide and Self-inflicted Injury	970-979	202	338	1,766	2,612	0.34	0.50	37	33	8	5
Homicide and Assault	980-985	206	59	1,239	370	0.24	0.07	36	39	...	...
Total	...	...	...	4,772	2,916	55.218	38,583	10.56	7.36	28	35
GRAND TOTAL	...	...	...	7,688	93,801	17.92	31	87	66	153	153

Derby District Hospital

ALL PATIENTS DISCHARGED, 1967. IN AGE GROUPS

Age Groups	Number of Cases		Per cent. of Total	Total Days Stay in Hospital		Per cent. of Grand Total	Average No. of Days in Hospital	
	Male	Female		Male	Female		Male	Female
Races 1 and 4*								
00-14....	152	132	25.52	564	494	16.97	3.71	3.74
15-19....	37	31	6.11	187	176	5.82	5.05	5.68
20-29....	197	104	27.04	1,103	639	27.93	5.60	6.14
30-39....	132	52	16.53	651	300	15.25	4.93	5.77
40-49....	87	34	10.87	551	257	12.96	6.33	7.56
50-59....	67	20	7.81	561	110	10.76	8.37	5.50
60-69....	45	6	4.58	334	14	5.58	7.42	2.33
70 and over....	13	3	1.44	265	23	4.62	20.38	7.67
Not known ....	....	1	0.09	....	7	0.11	....	....
Total	730	383	100.00	4,216	2,020	100.00	5.78	5.27
Total Male and Female	1,113		100.00	6,236		100.00	5.6	
Races 2 and 3								
00-14....	453	356	51.46	2,640	2,113	36.76	5.83	5.94
15-19....	46	61	6.81	370	869	6.72	8.04	14.25
20-29....	76	145	14.06	758	1,132	14.62	9.97	7.80
30-39....	63	85	9.41	595	849	11.17	9.44	9.99
40-49....	42	63	6.68	258	663	7.12	6.14	10.52
50-59....	42	24	4.20	374	223	4.62	8.90	9.29
60-69....	36	31	4.26	490	337	6.40	13.61	10.87
70 and over....	25	9	2.16	1,065	70	8.78	42.60	7.78
Not known	6	9	0.95	25	100	0.97	4.16	11.11
Total	789	783	100.00	6,575	6,356	100.00	8.33	8.12
Total Male and Female	1,572		100.00	12,931		100.00	8.23	
Total Male and Female (All Races)	2,685		100.00	19,167		100.00	7.14	

* Races 1 and 4 = White

Races 2 and 3 = Aboriginal

Daily Bed Average = 52.5

Derby District Hospital

OPERATION CASES IN AGE GROUPS, 1967

Age Groups	Number of Cases		Per cent. of Total	Total Days Stay in Hospital		Per cent. of Grand Total	Average No. of Days in Hospital	
	Male	Female		Male	Female		Male	Female
Raees 1 and 4 *								
00-14....	29	22	1.89	114	163	1.44	3.93	7.41
14-19....	7	8	0.56	83	72	0.81	11.86	9.00
20-29....	48	20	2.53	390	102	2.53	8.12	5.10
30-39....	17	16	1.23	112	88	1.04	6.59	5.50
40-49....	12	9	0.78	93	109	1.05	7.75	12.11
50-59....	4	4	0.30	70	32	0.53	17.50	8.00
60-69....	6	....	0.22	95	....	0.50	15.83	....
70 and over....	3	2	0.19	38	19	0.30	12.67	8.00
Total	126	81	7.71	995	585	8.24	7.90	7.22
Total Male and Female	207	....	7.71	1,580	....	8.24	7.63	....
Raees 2 and 3								
00-14....	39	33	2.68	425	266	3.60	10.90	8.06
14-19....	9	13	0.81	211	156	1.91	23.44	12.00
20-29....	30	16	1.71	387	170	2.90	12.90	10.63
30-39....	18	15	1.23	246	232	2.49	13.67	15.47
40-49....	10	16	0.97	83	172	1.33	8.30	10.75
50-59....	10	4	0.52	134	53	0.98	13.40	13.25
60-69....	5	3	0.30	121	53	0.93	24.20	17.67
70 and over....	9	1	0.37	240	27	1.39	26.67	27.00
Total	130	101	8.60	1,847	1,129	15.53	14.21	11.18
Total Male and Female	231	....	8.60	2,976	....	15.53	12.88	....
Total Male and Female (All Raees)	438	....	16.31	4,556	....	23.77	10.40	....

* Raees 1 and 4 = White
Raees 2 and 3 = Aboriginal

Derby District Hospital
PATIENTS DISCHARGED DURING 1967
Races 1 and 4 — White Patients

Item	Disease	International Classification Categories	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total		Average Number of Days in Hospital		Sex	Results*						
			M.	F.	M.	F.	M.	F.	M.	F.		M.	F.	M.	F.	M.		
												1	2	3	4	5		
1	Tuberculosis—All forms	001-019	2	1	11	0.06	0.06	5.5	11.0	43.5	12.0	M	1	1	1	1	1	
2	Syphilis, Gonorrhoea and Other Venereal Diseases	020-039	2	14	0.07	0.07	7.0	7.0	32.5	32.5	F	2	2	2	2	2	2	
3	Other Infectious Diseases	040-138	68	51	349	299	1.82	1.56	5.1	5.9	22.3	15.5	M	1	1	1	1	1
4	Malignant Neoplasms, including those of Lymphatic and Haemopoietic Systems	140-205	5	1	23	6	0.12	0.03	4.6	6.0	57.0	1.0	M	2	1	2	2	2
5	Benign and Unspecified Neoplasms	210-239	5	3	23	25	0.12	0.13	4.6	8.3	38.4	39.3	M	4	4	1	1	1
6	Allergic Disorders	240-245	10	4	69	18	0.36	0.09	6.9	4.5	29.7	23.5	F	3	3	3	3	3
7	Diseases of Thyroid Gland	250-254	...	...	...	...	...	...	...	...	...	F	4	4	4	4	4	
8	Diabetes Mellitus	260	1	...	2	0.01	0.01	2.0	2.0	41.0	41.0	M	1	1	1	1	1	
9	Diseases of other Endocrine Glands	270-277	...	...	...	...	...	...	...	...	...	F	...	...	...	...	...
10	Avitaminoses and other Metabolic Diseases	280-289	2	...	34	0.18	0.18	17.0	17.0	47.0	47.0	M	2	2	2	2	2	
11	Diseases of Blood Forming Organs and Blood	290-299	3	...	5.5	0.29	0.29	18.3	18.3	55.3	55.3	M	3	3	3	3	3	
12	Mental Psychoneurotic and Personality Disorders	300-326	23	6	89	27	0.46	0.14	3.9	4.5	41.0	45.2	M	23	23	23	23	23
13	Vascular Lesions Affecting Central Nervous System	330-334	1	1	58	4	0.30	0.02	58.0	4.0	59.0	74.0	M	6	6	6	6	6
14	Inflammatory and other Diseases of Central Nervous System	340-357	2	5	9	16	0.05	0.08	4.5	3.2	34.0	22.6	M	1	1	1	1	1
15	Diseases of Nerves and Peripheral Ganglia	360-369	2	2	14	19	0.07	0.10	7.0	9.5	41.5	42.5	M	2	2	2	2	2
16	Diseases of the Eye	370-389	11	7	31	29	0.16	0.15	2.8	4.1	25.5	18.9	M	11	11	11	11	11
17	Diseases of Ear and Mastoid Process	390-398	17	4	8.5	12	0.44	0.06	5.0	3.0	26.5	6.7	M	1	1	1	1	1
18	Rheumatic Fever and Chronic Rheumatic Heart Disease	400-416	1	2	62	47	0.32	0.25	62.0	23.5	10.0	20.0	M	4	4	4	4	4
19	Diseases of the Heart and Arteries including Hypertension and Arteriosclerosis	420-456	7	1	11.9	1	0.62	0.01	17.0	1.0	58.4	31.0	M	5	5	5	5	5
20	Diseases of Veins and other Diseases of Circulatory System	460-468	10	7	60	58	0.31	0.30	6.0	8.3	35.9	30.0	M	10	10	10	10	10
21	Diseases of Respiratory System	470-527	71	41	309	154	1.61	0.80	4.3	3.8	28.2	16.1	M	7	7	7	7	7
22	Diseases of Buccal Cavity and Oesophagus	530-539	8	5	18	7	0.09	0.04	2.2	1.4	21.9	7.6	M	2	2	2	2	2
23	Diseases of Stomach and Duodenum	540-545	18	5	70	16	0.37	0.08	3.9	3.2	38.6	33.4	M	5	5	5	5	5

24	Appendicitis	12	4	87	27	0.45	0.14	7.2	6.7	18.7	15.5	M
25	Hernia of Abdominal Cavity	5	....	57	....	0.30	....	11.4	....	37.8	....	F
26	Other Diseases of Intestines and Peritoneum	30	19	84	45	0.44	0.23	2.8	2.4	15.6	10.2	M
27	Diseases of Liver and Gall Bladder	5	3	58	7	0.30	0.04	11.6	2.3	39.4	45.0	F
28	Diseases of Pancreas ....	....	....	....	....	....	....	....	....	....	....	M
29	Nephritis and Nephrosis	2	....	10	....	0.05	....	5.0	....	9.5	....	F
30	Other Diseases of Urinary System	15	8	81	45	0.42	0.23	5.4	5.6	44.3	31.7	M
31	Diseases of Male Genital Organs	11	....	104	....	0.54	....	9.4	....	28.9	....	F
32	Diseases of Breast	3	....	....	12	....	0.06	....	4.0	....	24.3	M
33	Diseases of Female Genital Organs, Uterus, Ovary, Fallopian Tubes, Parametrium	24	....	129	....	0.67	....	5.4	....	28.9	M	F
34	Complications of Pregnancy	5	....	....	18	....	0.09	....	3.6	....	24.8	M
35	Abortion	3	....	....	9	....	0.05	....	3.0	....	25.0	M
36	Delivery without Mention of Complication	660	....	....	259	....	1.35	....	8.9	....	26.2	M
37	Delivery with Specified Complication	670-678	....	9	....	....	0.51	....	10.6	....	26.6	M
38	Complications of the Puerperium	680-689	....	3	....	....	0.16	....	10.0	....	18.3	M
39	Diseases of Skin and Cellular Tissue	690-716	104	41	683	150	3.56	0.78	6.6	3.7	30.1	24.2
40	Arthritis and Rheumatism Except Rheumatic Fever	720-727	6	5	23	31	0.12	0.16	3.8	6.2	46.8	44.2
41	Osteomyelitis and other Bone and Joint Diseases	730-738	17	3	170	44	0.89	0.23	10.0	14.7	31.2	25.7
42	Other Diseases of Musculoskeletal System	740-749	4	1	17	8	0.09	0.04	4.2	8.0	42.0	51.0
43	Congenital Malformations	750-759	1	....	1	....	0.01	....	1.0	....	4.0	M
44	Birth Injuries, Asphyxia and Infections of Newborn	760-776	1	3	15	12	0.08	0.06	15.0	4.0	1.0	M
45	Symptoms Referable to Systems or Organs (Senility) and Ill-Defined Diseases	780-789	48	26	146	68	0.76	0.35	3.0	2.6	25.9	15.2
46	....	790-795	17	....	68	....	0.35	....	4.0	....	34.3	....
	Total ....	....	....	....	2,216	1,740	16.20	9.05	4.1	5.2	29.8	21.7
		547	335	....	....	....	....	....	....	....	....	M
		5	3	41	4	....	0.21	0.02	8.2	1.3	31.0	9.7
47	Fractures of Face and Skull Bones	N800-N804	....	....	....	....	....	....	....	....	....	M
48	Fractures and Dislocations of Vertebra Column	N805-N806	8	1	57	4	0.30	0.02	7.1	4.0	36.4	22.0
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Item	Disease	International Classification Categories	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total		Average Number Days in Hospital		Sex	Results*						
			M.	F.	M.	F.	M.	F.	M.	F.		M.	F.	M.	F.	M.		
49	Other Fractures of Trunk, Sternum, Larynx and Pelvis	N807-N809	4	...	25	...	0.13	...	6.2	...	37.7	...	4	...	...	...	...	...
50	Fractures of Upper Limb	N810-N819	21	5	59	15	0.31	0.08	2.8	3.0	24.7	18.8	21	...	...	...	...	...
51	Fractures of Lower Limb	N820-N829	13	6	234	150	1.22	0.78	18.0	25.0	40.2	42.3	5	...	...	...	...	...
52	Dislocation Without Fracture	N830-N839	...	1	...	4	...	0.02	...	4.0	...	31.0	M	...	...	...	1	...
53	Sprains and Strains	N840-N848	16	5	107	23	0.56	0.12	6.7	4.6	40.1	35.4	1	...	...	...	...	...
54	Head Injury (Excluding Skull Fracture)	N850-N856	13	5	35	16	0.18	0.08	2.7	3.2	29.3	23.8	16	...	...	...	...	...
55	Internal Injury of Chest, Abdomen and Pelvis	N860-N869	2	...	23	...	0.12	...	11.5	...	32.5	M	5	...	...	...	...	...
56	Lacerations, Contusions and Superficial Injuries	N870-N929	58	10	293	22	1.53	0.11	5.1	2.2	31.8	32.3	13	...	...	...	...	...
57	Effects of Foreign Body Entering Through Orifice	N930-N936	14	4	80	11	0.42	0.06	5.7	2.8	28.4	16.0	5	...	...	...	...	...
58	Burns	N940-N949	9	3	61	23	0.32	0.12	6.8	7.7	16.7	M	10	...	...	...	...	...
59	Injury to Nerves and Spinal Cord Without Bone Injury	N950-N959	1	...	7	...	0.04	...	7.0	...	36.0	M	3	...	...	...	...	...
60	Effects of Poisons	N960-N979	10	2	27	4	0.11	0.02	2.2	2.0	23.2	2.0	1	...	...	...	...	...
61	Effects of Exposure and Unspecified Injuries and Reactions	N980-N999	5	2	53	3	0.28	0.02	10.6	1.5	36.2	52.0	2	...	...	...	...	...
	Total (N Categories)	...	179	47	1,097	279	5.73	1.45	6.1	5.9	31.6	27.0	179	...	...	...	...	1
62	Investigations, Observations and Aftercare	Y00-Y10	4	1	11	1	0.06	0.01	2.7	1.0	23.0	26.0	45	...	...	...	...	...
	Total (X Categories)	...	4	1	11	1	0.06	0.01	2.7	1.0	23.0	26.0	1	...	...	...	...	...
	Grand Total	...	730	383	4,216	2,020	21.99	10.51	5.78	30.21	22.36	M	11	707	8	4	2	...

* Results : 1 — Cured
2 — Improved
3 — Unchanged
4 — Investigation only
5 — Death

Item	Operation	Code of Surgical Operations	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total		Average Number Days in Hospital		Average Age of Patients		Sex	Results*	
			Male	Female	Male	Female	Male	Female	Male	Female	Male	Female			
			1	2	3	4	5								
1	Neurosurgery, Brain and Cerebral Meninges	001-019	....	....	....	....	....	....	....	....	....	....	M	....
2	Neurosurgery, Spinal Cord and Spinal Meninges	020-029	....	....	....	....	....	....	....	....	F	....	M	....
3	Neurosurgery, Peripheral Nerves and Sympathetic System	030-049	1	....	1	....	0.02	....	1.0	....	F	....	F	....
4	Thyroid and Parathyroid	070-079	....	....	....	....	....	....	....	....	M	....	M	1
5	Adrenals	080-084	....	....	....	....	....	....	....	....	M	....	F	....
6	Pituitary, Thymus and Other Endocrine Organs	085-096	....	....	....	....	....	....	....	....	M	....	M	....
7	Ophthalmic Operations	100-199	3	1	18	5	0.40	0.11	6.0	5.0	F	....	F	3
8	Ear, Nose and Throat	200-249	4	4	26	11	0.57	0.24	6.5	2.8	M	....	M	1
9	Teeth and Gums	250-259	5	4	10	5	0.22	0.11	2.0	1.2	F	....	F	4
10	Pharynx, Tongue, Palate and Buccal Cavity	260-299	5	5	21	24	0.46	0.53	4.2	4.8	M	....	M	2
11	Heart and Pericardium and Intra-thoracic Great Vessels	300-329	....	....	....	....	....	....	....	....	F	....	F	3
12	Lung, Bronchus and Mediastinum and Collapse Therapy	330-354	2	29	0.64	14.5	32.0	M	M	1
13	Operations on Breast	380-389	2	11	0.24	5.5	F	F	2
14	Operations on Abdominal Wall	400-419	5	2	68	23	1.49	0.51	13.6	11.5	M	....	M	5
15	Operations on Stomach	420-439	....	....	....	....	....	....	....	....	F	....	F	2
16	Operations on Appendix	440-449	8	4	79	33	1.73	0.72	9.9	8.2	M	....	M	4
17	Operations on Intestines (Except Appendix and Rectum)	450-469	1	....	10	....	0.22	....	10.0	....	F	....	F	1
18	Operation on Rectum and Anus	470-499	2	1	14	1	0.31	0.02	7.0	1.0	M	....	M	2
19	Operations on Liver and Bile Ducts	500-529	....	....	....	....	....	....	....	....	F	....	F	1
20	Operation on Pancreas	530-539	....	....	....	....	....	....	....	....	M	....	M	....
21	Operation on Spleen	540-549	....	....	....	....	....	....	....	....	F	....	F	....

Races 1 and 4

Item	Operation	Code of Surgical Operations	OPERATION CASES DISCHARGED, 1967—continued						Results*						
			Number of Cases		Number of Days in Hospital		Per cent. of Grand Total		Average Number of Days in Hospital	Sex		Average Age of Patients	Age	Results	
			M.	F.	M.	F.	M.	F.		M.	F.				
22	Operation on Kidney and Ureter ...	600-639	1	...	5	...	0.11	...	5.0	...	32.0	...	1	...	
23	Operation on Bladder and Urethra	640-669	3	...	18	...	0.40	...	6.0	...	69.3	...	3	...	
24	Operation on Prostate and Seminal Vesicles	670-679	1	...	30	...	0.66	...	30.0	...	78.0	...	1	...	
25	Other Male Genital Organs ...	680-699	8	...	67	...	1.47	...	8.4	...	14.7	...	1	...	
26	On Ovary and Fallopian Tubes ...	700-719	...	2	...	16	...	0.35	...	8.0	...	36.5	M	2	...
27	On Uterus and Supporting Structures	720-739	...	12	...	69	...	1.52	...	5.7	...	32.5	M	1	...
28	On Vagina, Vulva and Perineum ...	740-759	...	2	...	11	...	0.24	...	5.5	...	40.0	M	2	...
29	Obstetric Operations (D and C) ...	760-799	...	5	...	38	...	0.83	...	7.6	...	22.6	M	4	...
30	Orthopaedic Surgery ...	800-899	22	8	238	177	5.23	3.89	10.8	22.1	29.9	43.6	M	4	...
31	On Peripheral Blood Vessels and Lymphatic System	900-929	1	3	10	36	0.22	0.79	10.0	12.0	21.0	41.0	M	7	...
32	On Skin and Subcutaneous Tissues	930-949	52	25	337	123	7.40	2.70	6.5	4.9	24.6	21.2	M	4	...
33	Other Surgical Procedures ...	950-999	2	1	14	2	0.31	0.04	7.0	2.0	31.0	43.0	M	2	...
	Total ...	...	126	81	995	585	21.84	12.84	7.90	7.22	26.71	25.65	M	10	11.5
													F	15	6.5
														1	1

Operation cases occupied 8.24 per cent. of the total bed days. To find the percentage of total beds occupied by the various types of operation cases multiply the percentage figure in column 6 by the figure 0.082%.

* Results : 1 — Cured
2 — Improved
3 — Unchanged
4 — Investigation only
5 — Death

Races 2 and 3—Aboriginal Patients

Derby District Hospital
PATIENTS DISCHARGED DURING 1967

Item	Disease	International Classification Categories	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total		Average Number of Days in Hospital		Sex	Results*				
			Male	Female	Male	Female	Male	Female	Male	Female		Male	Female	Male	Female	Male
1	Tuberculosis—All forms	001-019	...	...	...	...	...	...	...	...	M	...	...	...	...	...
2	Syphilis, Gonorrhoea and Other Venereal Diseases	020-039	3	...	26	...	0.14	...	8.7	...	F	...	...	...	...	...
3	Other Infectious Diseases	040-138	107	120	719	1,166	3.75	6.08	6.7	9.7	M	...	...	...	...	...
4	Malignant Neoplasms Including those of Lymphatic and Haemopoietic Systems	140-205	2	4	36	68	0.19	0.35	18.0	17.0	F	...	...	...	...	...
5	Benign and Unspecified Neoplasms	210-239	2	4	24	70	0.13	0.37	12.0	17.5	M	...	...	...	...	...
6	Allergic Disorders	240-245	5	9	16	31	0.08	0.16	3.2	3.4	F	...	...	...	...	...
7	Diseases of Thyroid Gland	250-254	1	1	113	13	0.59	0.07	113.0	13.0	M	...	...	...	...	...
8	Diabetes Mellitus	260	5	3	53	15	0.28	0.08	10.6	63.4	F	...	...	...	...	...
9	Diseases of Other Endocrine Glands	270-277	...	...	...	...	...	...	...	...	M	...	...	...	...	...
10	Avitaminoes and Other Metabolic Diseases	280-289	3	...	83	...	0.43	...	27.7	37.7	F	...	...	...	...	...
11	Diseases of Blood Forming Organs and Blood	290-299	2	1	20	4	0.10	0.02	10.0	4.0	M	...	...	...	...	...
12	Mental, Psychoneurotic and Personality Disorders	300-326	...	4	...	39	...	0.20	...	9.7	F	...	...	...	...	...
13	Vascular Lesions Affecting Central Nervous System	330-334	2	1	52	14	0.27	0.07	26.0	14.0	M	...	...	...	...	...
14	Inflammatory and Other Diseases of Central Nervous System	340-357	8	4	127	33	0.66	0.17	15.9	8.2	F	...	...	...	...	...
15	Diseases of Nervous and Peripheral Ganglia	360-369	...	...	...	...	...	...	...	...	M	...	...	...	...	...
16	Diseases of the Eye	370-389	16	11	65	106	0.34	0.55	4.1	9.6	F	...	...	...	...	...
17	Diseases of Ear and Mastoid Process	390-398	20	14	97	70	0.51	0.37	4.8	5.0	M	...	...	...	...	...
18	Rheumatic Fever and Chronic Rheumatic Heart Disease	400-416	3	...	55	...	0.29	...	18.3	...	F	...	...	...	...	...
19	Diseases of the Heart and Arteries Including Hypertension and Arteriosclerosis	420-456	11	4	167	23	0.87	0.12	15.2	5.7	M	...	...	...	...	...
20	Diseases of Veins and Other Diseases of Circulatory System	460-468	3	5	12	79	0.06	0.41	4.0	15.8	F	...	...	...	...	...

Results*

Average Age of Patients

Average Number of Days in Hospital

Sex

Results*

Sex

Results*

Item	Disease	International Classification Categories	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total		Average Number of Days in Hospital		Sex		Results*				
			Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	1	2	3	4	5
21	Diseases of Respiratory System	470-527	160	139	1,383	737	7.22	3.85	8.6	5.3	12.5	16.1	1	156	1	...	3
22	Diseases of Buccal Cavity and Oesophagus	530-539	9	4	30	39	0.16	0.20	3.3	9.7	24.1	20.2	2	134	1	...	2
23	Diseases of Stomach and Duodenum	540-545	4	...	13	...	0.07	...	3.2	...	14.3	...	1	8	4	...	...
24	Appenditis	550-553	5	...	30	...	0.16	...	6.0	...	24.6	...	1	4	4	...	...
25	Hernia of Abdominal Cavity	560-561	6	2	49	37	0.26	0.19	8.1	18.5	38.7	18.5	1	6	2	...	...
26	Other Diseases of Intestines and Peritoneum	570-578	51	51	331	308	1.73	1.61	6.5	6.0	3.5	5.3	1	50	2	...	...
27	Diseases of Liver and Gall Bladder	580-586	6	4	64	35	0.33	0.18	10.7	8.7	48.2	39.7	1	51	5	...	1
28	Diseases of Pancreas	587	...	...	...	...	...	...	...	...	...	...	1	4	4	...	...
29	Nephritis and Nephrosis	590-594	1	2	75	8	0.39	0.04	75.0	4.0	25.0	8.0	1	...	...	...	...
30	Other Diseases of Urinary System	600-609	10	14	64	89	0.33	0.46	6.4	6.4	32.4	34.9	1	...	2	...	...
31	Diseases of Male Genital Organs	610-617	8	...	137	...	0.71	...	17.1	...	38.2	...	1	...	8	...	...
32	Diseases of Breast	620-621	...	8	...	52	...	0.27	...	6.5	...	25.0	...	...	8	...	...
33	Diseases of Female Genital Organs, Uterus, Ovary, Fallopian Tubes, Parametrium	622-637	...	16	...	116	...	0.61	...	7.3	...	30.6	...	...	16	...	...
34	Complications of Pregnancy	640-649	...	36	...	214	...	1.12	...	5.9	...	26.4	...	...	36	...	...
35	Abortion	650-652	...	13	...	51	...	0.27	...	3.9	...	25.6	...	...	13	...	...
36	Delivery Without Mention of Complication	660	...	79	...	881	...	4.60	...	11.2	...	26.7	...	...	79	...	...
37	Delivery With Specified Complication	670-678	...	43	...	493	...	2.57	...	11.5	...	26.3	...	...	43	...	...
38	Complications of the Puerperium	680-689	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
39	Diseases of Skin and Cellular Tissue	690-716	104	72	807	576	4.21	3.01	7.8	8.0	22.0	16.3	1	103	1	...	...
40	Arthritis and Rheumatism Except Rheumatic Fever	720-727	2	1	15	3	0.08	0.02	7.5	3.0	32.0	40.0	2	...	...	...	...
41	Osteomyelitis and Other Bone and Joint Diseases	730-738	12	5	170	33	0.89	0.17	14.2	6.6	28.3	30.2	1	...	12	...	...
42	Other Diseases of Musculoskeletal System	740-749	5	2	22	4	0.11	0.02	4.4	2.0	42.5	42.5	2	...	4	...	...

43	Congenital Malformations ...	750-759	1	2	17	40	0.09	0.21	17.0	20.0	31.0	M
44	Birth Injuries, Asphyxia and Infections of Newborn	760-776	5	6	101	111	0.53	0.58	20.2	18.5	1.0	M
45	Symptoms Referable to Systems or Organs (Senility) and Ill-Defined Diseases	780-789	43	26	299	102	1.56	0.53	6.9	3.9	20.2	M
46		790-795	6	6	40	80	0.21	0.42	6.7	13.3	59.7	M
	Total	...	...	631	716	5,312	5,750	27.74	29.95	8.4	17.3	M
								0.14	5.2	21.0	5	F
47	Fractures of Face and Skull Bones	N800-N804	5	...	26	...	...	...	...	...	...	M
48	Fractures and Dislocations of Vertebral Column	N805-N806	2	2	12	11	0.06	0.06	6.0	5.5	52.5	M
49	Other Fractures of Trunk, Sternum, Larynx and Pelvis	N807-N809	...	...	...	...	...	...	...	...	...	F
50	Fractures of Upper Limb	N810-N819	23	12	149	120	0.78	0.63	6.5	10.0	30.9	M
51	Fractures of Lower Limb	N820-N829	17	7	362	71	1.89	0.37	21.3	10.1	27.9	M
52	Dislocation Without Fracture	N830-N839	4	2	15	3	0.08	0.02	3.8	1.5	23.8	M
53	Sprains and Strains	N840-N848	13	...	72	...	0.38	...	5.5	...	33.5	M
54	Head Injury (Excluding Skull Fracture)	N850-N856	7	4	11	8	0.06	0.04	1.6	2.0	26.9	M
55	Internal Injury of Chest, Abdomen and Pelvis	N860-N869	1	1	10	14	0.05	0.07	10.0	14.0	17.0	M
56	Lacerations, Contusions and Superficial Injuries	N870-N929	43	16	276	87	1.44	0.45	6.4	5.4	24.0	M
57	Effects of Foreign Body Entering Through Orifice	N930-N936	5	3	11	14	0.06	0.07	2.2	4.7	12.2	M
58	Burns	N940-N949	8	7	185	199	0.97	1.04	2.3	28.4	18.8	M
59	Injury to Nerves and Spinal Cord	N950-N959	...	...	...	...	...	...	...	...	...	F
60	Without Bone Injury	N960-N979	10	3	22	7	0.11	0.04	2.2	4.4	16.0	M
61	Effects of Poisons	...	...	...	...	...	...	...	...	...	10	F
	Total (N Categories)	...	...	138	57	1,151	526	6.02	2.79	8.3	9.2	M
62	Investigations, Observations and Aftercare	Y00-Y10	20	10	112	80	0.58	0.42	5.6	8.0	17.2	M
	Total (Y Categories)	...	...	20	10	112	80	0.58	0.42	5.6	8.0	M
	Grand Total	...	...	789	783	6,575	6,356	34.34	33.16	8.33	8.12	M
												F
												14.5
												15
												8
												12

*Results : 1. Cured
 2. Improved
 3. Unchanged
 4. Investigation only
 5. Death

Item	Operation	Code of Surgical Operations	Number of Cases		Number of Days in Hospital		Per cent. of Grand Total		Average Number Days in Hospital		Results*					
			Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	
1	Neurosurgery. Brain and Cerebral Meninges	001-019	...	...	...	...	...	...	...	...	...	...	...	...	...	...
2	Neurosurgery. Spinal Cord and Spinal Meninges	020-029	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3.	Neurosurgery. Peripheral Nerves and Sympathetic System	030-049	...	...	...	...	...	...	...	...	...	...	...	...	...	...
4	Thyroid and Parathyroid	070-079	...	1	...	13	...	0.29	...	13.0	...	36.0	M	...	1	...
5	Adrenals	080-084	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	Pituitary, Thymus and Other Endocrine Organs	085-096	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	Ophthalmic Operations	100-199	4	7	42	116	0.92	2.55	10.5	16.6	51.0	38.0	M	...	4	...
8	Ear, Nose and Throat	200-249	1	5	1	52	0.02	1.14	0.10	10.4	5.0	14.4	M	...	1	6
9	Teeth and Gums	250-259	2	...	11	...	0.24	...	0.55	...	34.5	...	M	...	2	...
10	Pharynx, Tongue, Palate and Buccal Cavity	260-299	1	5	8	40	0.18	0.88	0.80	8.0	15.0	10.4	M	...	1	...
11	Heart and Pericardium and Intra-thoracic Great Vessels	300-329	...	...	...	...	...	...	...	...	...	...	F	...	2	3
12	Lung, Bronchus and Mediastinum and Collapse Therapy	330-354	...	...	...	...	...	...	...	...	...	...	M	...	...	...
13	Operations on Breast	380-389	...	1	...	16	...	0.35	...	16.0	...	48.0	M	...	1	...
14	Operations on Abdominal Wall	400-419	5	7	61	100	1.34	2.20	12.2	14.3	48.4	30.1	M	...	4	...
15	Operations on Stomach	420-439	...	...	...	...	...	...	...	...	...	...	M	...	6	...
16	Operations on Appendix	440-449	3	...	30	...	0.66	...	10.0	...	29.3	...	F	...	2	...
17	Operations on Intestines (except Appendix and Rectum)	450-469	...	...	...	...	...	...	...	...	...	...	M	...	1	...
18	Operation on Rectum and Anus	470-499	1	...	34	...	0.75	...	34.0	...	70.0	...	F	...	1	...
19	Operations on Liver and Bile Ducts	500-529	...	1	...	15	...	0.33	...	15.0	...	36.0	M	...	1	...
20	Operation on Pancreas	530-539	...	...	...	...	...	...	...	...	...	...	F	...	...	...

21	Operation on Spleen	....	540-549	1	....	3	....	0.07	....	3.0	....	21.0	....
22	Operation on Kidney and Ureter	....	600-639	1	....	75	....	1.65	....	75.0	....	25.0	....
23	Operation on Bladder and Urethra	640-669	6	....	162	....	3.56	....	27.0	....	53.6	....
24	Operation on Prostrate and Seminal Vesicles	670-679	4	....	130	....	2.85	....	32.5	....	71.5	....
25	Other Male Genital Organs	....	680-699	13	....	55	....	1.21	....	4.2	....	14.2	....
26	On Ovary and Fallopian Tubes	....	700-719	....	....	....	....	....	....	....	....	....	....
27	On Uterus and Supporting Structures	720-739	....	5	....	97	....	2.13	....	19.4	....	32.0	....
28	On Vagina, Vulva and Perineum	740-759	....	....	....	....	....	....	....	....	....	....	....
29	Obstetric Operations (D and C)	760-799	....	11	....	111	....	2.44	....	10.1	....	26.8	....
30	Orthopaedic Surgery	....	800-899	30	16	518	123	11.37	2.70	17.3	7.7	27.5	27.2
31	On Peripheral Blood Vessels and Lymphatic System	900-929	....	2	....	36	....	0.79	....	18.0	....	34.5	....
32	On Skin and Subcutaneous Tissues	930-949	56	39	695	404	15.26	8.85	12.4	10.4	23.3	19.4	....
33	Other Surgical Procedures	....	950-999	2	1	22	6	0.48	0.13	11.0	6.0	34.5	40.0
	Total	....	....	130	101	1,847	1,129	40.56	24.77	14.21	11.18	28.70	24.50
										M	F	M	F
										14	17	113	83
										3	1	....	....

Operation cases occupied 15.53 per cent. of the total bed days. To find percentage of total beds occupied by various types of operation cases, multiply the percentage figure in column 6 by the figure 0.155 per cent.

* Result : 1 — Cured
 2 — Improved
 3 — Unchanged
 4 — Investigation only
 5 — Death

Derby District Hospital

ACCIDENTS, POISONINGS AND VIOLENCE, 1967

Category International Classification E Code	Number Cases	Number of Days in Hospital		Per cent. of Grand Total		Average Age		Number Died	
		Male	Female	Male	Female	Male	Female		
Accidents									
Races 1 and 4—									
Railway Accidents	800-802	11	2	46	66	0.24	0.34	44	
Motor Vehicle Traffic Accidents	810-825	4	29	0.15	0.01	50	54	...	
Motor Vehicle Non-Traffic Accidents	830-835	1	2	...	...	...	...	...
Other Road Vehicle Accidents	840-845	...	...	...	...	...	...	...
Water Transport Accidents	850-858	...	...	...	...	...	...	...
Aircraft Accidents	860-866	6	2	14	4	0.07	0.02	1	
Accidental Poisoning	870-895	21	17	184	121	0.96	0.63	2	
Accidental Falls	900-904	124	21	771	63	4.02	0.33	28	
Other Accidents	910-936	8	3	42	23	0.22	0.12	31	
Accidents Caused by Hot Substances, Corrosive or Steam	917	...	...	...	...	...	...	33
Medical and Surgical Complications and Therapeutic	940-959	...	1	1	1	0.01	0.01	27	
Misadventures	960-965	...	...	...	...	0.02	0.01	27
Late Effects of Injury	970-979	3	3	4	5	0.03	0.01	17	
Suicide and Self-inflicted Injury	980-985	1	1	1	1	0.52	0.52	17	
TOTAL :				179	47	1,097	279	1	
						5.72	1.46		
						32	27		
Races 2 and 3									
Railway Accidents	800-802	...	...	...	18	...	...	1
Motor Vehicle Traffic Accidents	810-825	4	...	...	...	0.09	...	...
Motor Vehicle Non-Traffic Accidents	830-835	...	...	...	10	...	...	...
Other Road Vehicle Accidents	840-845	1	...	...	...	...	...	...
Water Transport Accidents	850-858	...	...	...	...	...	...	...
Aircraft Accidents	860-866	...	...	...	...	...	...	...
Accidental Poisoning	870-895	8	...	20	...	0.10	0.43	5	
Accidental Falls	900-904	18	1	83	2	0.43	0.01	22	
Other Accidents	910-936	97	14	841	64	4.39	0.33	27	
Accidents Caused by Hot Substances, Corrosive or Steam	917	7	37	164	364	0.86	1.90	18	
Medical and Surgical Complications and Therapeutic	940-959	...	4	...	10	...	0.52	12	
Misadventures	960-965	...	...	...	...	...	...	...
Late Effects of Injury	970-979	1	...	1	...	0.01	0.01	14	
Suicide and Self-inflicted Injury	980-985	2	1	14	4	0.07	0.02	27	
Total :	Male	57	1,151	534	6,00	2.78	25	1	
	Female	...	...	...	...	...	...	1

Appendix XVI

Derby Leprosarium, Western Australia

Admissions and Discharges for the Year 1967, compiled from the Monthly Returns of the Superintendent

Month	Admissions						Discharges						Inmates Remaining in Leprosarium		
	Males			Females			Males			Females			Total Remaining		
	Admitted	Re-Admitted	Total Males	Admitted	Re-Admitted	Total Females	Discharged	Deceased	Discharged	Ab-sconded	Deceased	Discharged	Males	Females	
January	1	1	2	1	1	2	1	1	1	1	1	1	99	79	178
February	1	1	2	1	1	2	1	1	1	1	1	1	99	80	179
March	1	1	2	1	1	2	1	1	1	1	1	1	102	81	183
April	1	1	2	1	1	2	1	1	1	1	1	1	105	82	187
May	1	1	2	1	1	2	1	1	1	1	1	1	108	82	190
June	1	1	2	1	1	2	1	1	1	1	1	1	109	84	193
July	1	1	2	1	1	2	1	1	1	1	1	1	111	84	195
August	1	1	2	1	1	2	1	1	1	1	1	1	111	84	195
September	1	1	2	1	1	2	1	1	1	1	1	1	113	102	182
October	1	1	2	1	1	2	1	1	1	1	1	1	103	77	180
November	1	1	2	1	1	2	1	1	1	1	1	1	101	74	175
December	1	1	2	1	1	2	1	1	1	1	1	1	96	74	170
Total	4	13	17	6	8	14	31	19	2	1	17	1	18	39	...

Analysis of Admissions and Discharges During 1967

Inmates as at 31st December, 1966	178
Admissions for period ended 31st December, 1967	31
Discharged for period ended 31st December, 1967	36
Deaths for period ended 31st December, 1967	3
Absconded for period ended 31st December, 1967	0
Total Remaining at Leprosarium 31st December, 1967	170

Appendix XVII

Incidence and Mortality of Notifiable Diseases

Diseases Notifiable	1964		1965		1966		1967	
	Cases Diag- nosed	Deaths	Cases Diag- nosed	Deaths	Cases Diag- nosed	Deaths	Cases Diag- nosed	Deaths
Acute Rheumatism	8	...	6	1 (A)	...	...	...	1 (A)
Amoebiasis	1	...	3	1	...	...	...	...
Aukylostomiasis	37	...	2	...	...	...	17	...
Breast Abscess	4	...	5	...	...	...	...	...
Brucellosis	4	1	3	...	3	...	2	...
Chorea	...	...	1	...	...	...	...	...
Dengue Fever	...	...	...	...	...	...	...	...
Diphtheria	3	...	2	...	2	...	...	...
Dysentery (Amoebic)	2	...	...	...	...	...	2	...
Dysentery (Bacillary)	135	6	229	1	108	1	186	3
Erythema Nodosum	...	...	...	...	...	...	...	...
Hydatid	3	1	2	...	1	1	1	...
Infantile Diarrhoea	44	23 (B)	13	24 (B)	...	23 (B)	...	34 (B)
Infective Hepatitis	100	3	83	3	28	3	190	5
Lead Poisoning	...	...	...	...	1	...	...	...
Leprosy	11	...	18	...	13	1	12	...
Leptospirosis	4	...	14	...	7	...	2	...
Malaria	5	...	2	...	3	...	4	...
Meningoenceal Infection	1	1	2	4	6	4	4	2
Paratyphoid	...	...	3	...	1	...	1	...
Poliomyelitis	...	...	...	1 (C)	...	...	...	...
Pleural Effusion	1	...	1	...	...	...	3	...
Puerperal Fever	3	...	1	...	6	...	2	...
Purulent Ophthalmia	14	...	1	...	...	...	...	...
Rubella	190	...	587	...	...	...	...	...
Salmonella Infection	61	1	69	...	71	...	154	...
Scarlet Fever	61	...	41	...	59	...	29	...
Tetanus	8	5	1	1	2	...	...	...
Trachoma	147	...	77	...	...	...	...	...
P.T.B.	176	20	152	14	134	19	134	10
Other T.B.	31	...	25	...	40	...	36	...
Typhoid Fever	...	...	2	...	2	...	1	...
Typhus Fever	...	...	...	...	...	...	2	...

For 1966 and earlier years, excludes full-blood Aborigines. In 1967, Aborigines are included.

(A) Rheumatic Fever.

(B) Gastro-Enteritis and Colitis (except ulceration) under two years and diarrhoea of the new born.

(C) Late effects of acute poliomyelitis.

Appendix XVIII

Stillbirth and Infant Mortality Rates W.A.

Year	Total Births including Stillbirths	Stillbirth Rates	Mortality Rates			Total mortality rates under one year	Total mortality rates under one year including Stillbirths
			Under one week	Under one month	Over one month and under one year		
1946	12,398	23.1	17.1	20.6	9.6	30.3	53.4
1947	13,178	23.2	16.9	19.4	1.2	10.2	53.4
1948	13,197	20.5	16.9	18.7	8.4	25.0	45.5
1949	13,779	19.4	16.2	19.0	6.8	25.9	45.3
1950	14,468	16.6	16.2	18.0	8.6	26.7	43.3
1951	15,091	19.7	16.2	19.7	8.5	28.2	47.9
1952	15,697	18.1	15.5	17.7	6.9	24.5	42.6
1953	16,130	16.6	13.4	16.2	7.3	23.4	40.0
1954	16,198	16.7	14.2	15.8	6.4	22.2	38.9
1955	16,862	14.2	13.3	15.8	6.3	22.1	36.3
1956	17,142	13.2	13.0	15.7	6.7	22.4	35.6
1957	17,172	14.4	13.6	14.9	5.9	20.8	35.2
1958	16,956	13.3	12.8	14.2	7.1	21.2	34.5
1959	17,336	13.0	12.3	13.6	6.3	19.9	32.9
1960	17,152	13.2	13.9	15.7	5.7	21.3	34.5
1961	17,318	13.9	10.3	12.6	6.8	19.4	33.3
1962	17,267	11.8	12.6	14.3	7.7	22.0	33.8
1963	17,468	10.2	12.3	14.7	5.5	20.2	30.4
1964	16,855	10.1	11.8	12.9	6.6	19.5	29.5
1965	16,367	11.1	12.8	15.0	6.5	21.4	32.5
1966	17,175	9.8	12.1	14.1	5.0	19.2	28.9
1967	18,211	10.3	11.4	13.0	4.3	17.2	27.6

(a) For 1966 and earlier years, excludes Full-blood Aborigines. In 1967, Aborigines are included.

In above table all rates are calculated in deaths per 1,000 of total births, including stillbirths.

INFANT MORTALITY

Year	Births	Infant Mortality per 1,000 Live Births	
		Year	Births
1946	12,105	36.1	
1947	12,874	30.9	
1948	12,931	25.6	
1949	13,511	26.4	
1950	14,228	27.1	
1951	14,794	28.7	
1952	15,413	24.9	
1953	15,862	23.8	
1954	15,928	22.5	
1955	16,623	22.4	
1956	16,916	22.7	
1957	16,924	21.1	
1958	16,731	21.5	
1959	17,111	20.2	
1960	16,926	21.6	
1961	17,078	19.7	
1962	17,064	22.3	
1963	17,290	20.4	
1964	16,685	19.7	
1965	16,186	21.7	
1966	17,007	19.3	
1967	18,023	17.4	

(a) For 1966 and earlier years, excludes Full-blood Aborigines. In 1967 Aborigines are included.

STILLBIRTH AND INFANT MORTALITY RATES (a)

Area of Registration	Total Births Including Stillbirths	Stillbirth Rates	Infant Mortality Rates				Total Mortality Infant Deaths and Stillbirths
			Under one week	Under one month	Over One month and under one year	Total under one year	
1966	60,856	10.98	9.73	11.12	6.36	17.48	28.46
1967— New Zealand	61,904	11.87	N/A	11.05	6.75	17.80	29.67
1967— Western Australia	18,211	10.30	11.42	12.96	4.28	17.24	27.57
New South Wales	79,704	10.83	11.91	13.27	4.94	18.22	29.04
Victoria	66,282	12.02	11.22	12.49	4.12	16.61	28.64
Queensland	35,064	10.61	12.69	14.52	4.82	19.34	29.95
Tasmania	7,630	10.88	10.35	11.27	5.77	17.04	27.92
South Australia	20,597	10.24	10.29	11.75	5.05	16.80	27.04

(a) For year 1966, excludes Full-blood Aborigines. In 1967, Aborigines are included.
N/A denotes "not yet available".

Comparison of Infant Mortality and General Death Rate

Place	Infant Mortality Rate				General Death Rate			
	1964	1965	1966	1967	1964	1965	1966	1967
New Zealand (a)	19.1	19.5	17.7	18.0	8.83	8.72	8.86	8.43
Western Australia (b)	19.7	21.7	19.3	17.4	8.06	7.70	8.09	7.73
New South Wales (b)	20.3	19.1	19.2	18.4	9.61	9.33	9.57	9.19
Victoria (b)	16.9	17.5	17.4	16.8	8.87	8.86	8.90	8.66
Queensland (b)	19.2	17.8	17.7	19.5	9.07	8.64	8.93	8.65
South Australia (b)	19.0	18.4	17.5	17.0	8.61	8.26	8.54	8.16
Tasmania (b)	20.1	16.6	14.6	17.2	8.71	8.27	8.50	8.57

(a) Includes Maoris

(b) For 1966 and earlier years excludes Full-blood Aborigines. In 1967 Aborigines are included.

Maternal Mortality Rates per Thousand Live Births

Place	1960	1961	1962	1963	1964	1965	1966	1967
Western Australia (a)	0.47	0.41	0.29	0.23	0.36	0.19	0.41	0.11
New Zealand (b)	0.34	0.33	0.17	0.37	0.26	0.17	0.32	(c)
New South Wales (a)	0.68	0.50	0.34	0.32	0.34	0.32	0.28	0.24
Victoria (a)	0.25	0.32	0.18	0.21	0.31	0.36	0.25	0.20
Queensland (a)	0.68	0.76	0.64	0.25	0.29	0.30	0.40	0.26
Tasmania (a)	0.45	0.33	0.33	0.23	0.24	0.40	0.27	0.27
South Australia (a)	0.62	0.27	0.61	0.28	0.33	0.34	0.20	0.20

(a) For 1966 and earlier years excludes Full-blood Aborigines. In 1967 Aborigines are included.

(b) Non-Maori

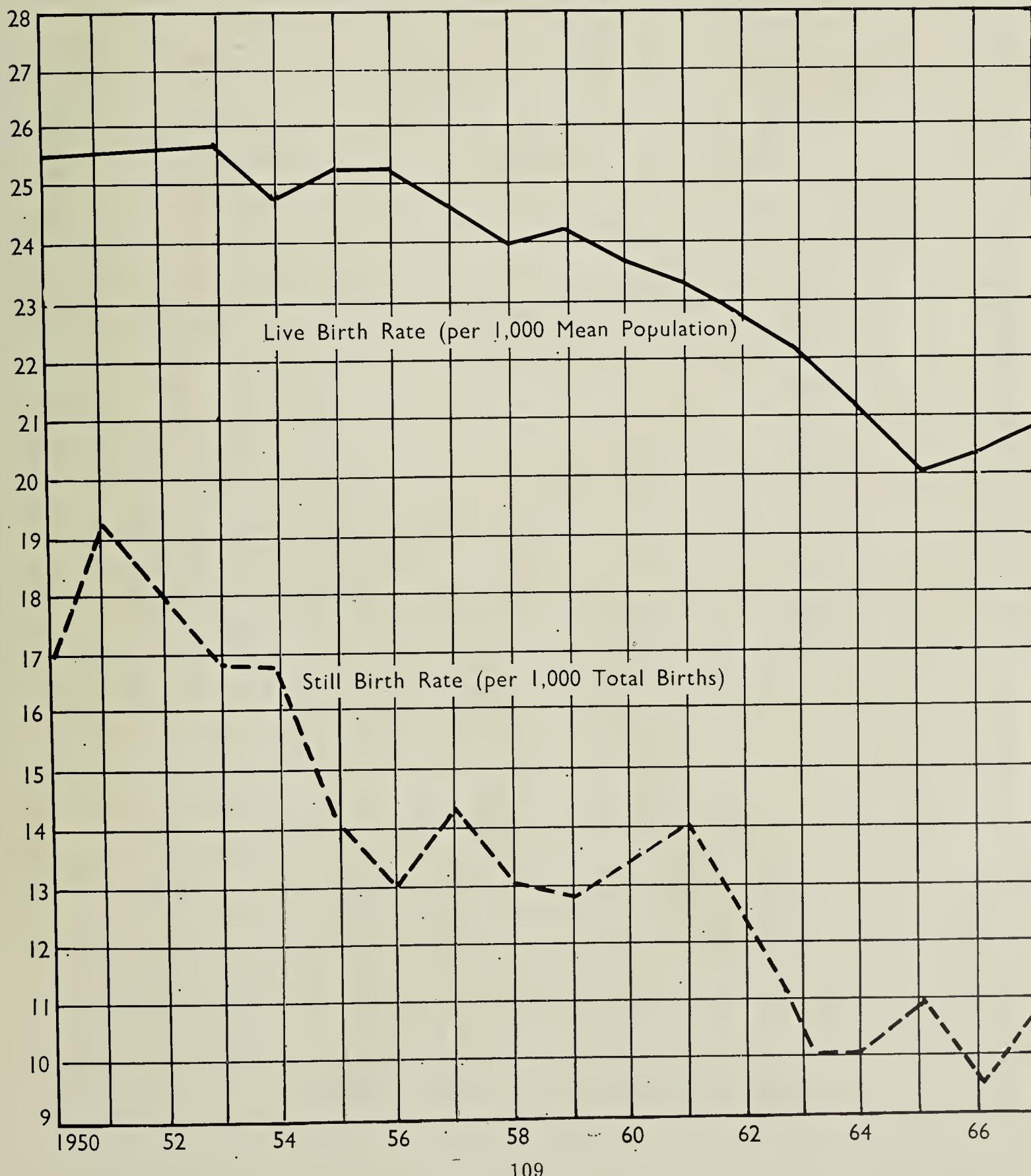
(c) Not yet available

Appendix XIX

Western Australia – Stillbirth and Birth Rates

Year	Mean Population	Live Births		Stillbirths	
		Number	Rate per 1,000 Mean Population	Number	Rate per 1,000 Total Births
1950	557,878	14,228	25.50	240	16.59
1951	580,317	14,794	25.49	297	19.68
1952	600,615	15,413	25.66	284	18.09
1953	621,034	15,862	25.54	268	16.62
1954	639,963	15,928	24.89	270	16.67
1955	657,323	16,623	25.29	239	14.17
1956	674,459	16,916	25.08	226	13.18
1957	687,448	16,924	24.62	248	14.44
1958	699,915	16,731	23.90	225	13.27
1959	711,737	17,111	24.04	225	12.98
1960	722,900	16,926	23.41	226	13.18
1961	737,386	17,078	23.16	240	13.86
1962	755,259	17,064	22.59	203	11.76
1963	773,235	17,290	22.23	178	10.19
1964	790,224	16,685	20.93	170	10.09
1965	806,189	16,186	19.85	181	11.06
1966	836,345	17,007	20.31	168	9.78
1967	876,997	18,023	20.55	188	10.32

For 1966 and earlier years excludes Full-blood Aborigines. In 1967 Aborigines are included.



Appendix XX

MATERNAL MORTALITY

Period		Average Live Births	Average Maternal Deaths	Average Rate
1901-1905	....	6,681	28·0	4·19
1906-1910	....	7,691	43·4	5·64
1911-1915	....	8,844	39·4	4·46
1916-1920	....	7,726	41·4	5·36
1921-1925	....	8,056	34·2	4·25
1926-1930	....	8,748	46·8	5·35
1931-1935	....	8,062	35·4	4·39
1936-1940	....	8,877	32·4	3·65
1941-1945	....	10,408	24·4	2·34
1946-1950	....	13,130	21·4	1·63
1951-1955	....	15,724	13·8	0·88
1956-1960	....	16,922	8·2	0·48
1961-1965	....	16,861	5·0	0·30

Year	Live Births	Deaths From									
		Puerperal Septicaemia		Other Puerperal Infection		Abortion		All other Complications of Pregnancy and of the Puerperal State		All Complications of Pregnancy and the Puerperal State	
1946	12,105	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
1947	12,874	1	0·08	1	0·08	8	0·62	22	1·71	32	2·49
1948	12,981	2	0·15	4	0·31	1	0·08	13	1·00	20	1·55
1949	13,511	....	....	2	0·15	3	0·22	11	0·81	16	1·18
1950	14,228	....	....	2	0·14	1	0·07	10	0·70	13	0·91
1951	14,794	....	....	2	0·14	3	0·02	11	0·74	16	1·08
1952	15,413	....	....	3	0·19	3	0·19	12	0·78	18	1·17
1953	15,862	....	....	....	....	1	0·06	8	0·50	9	1·57
1954	15,928	....	....	....	....	5	0·31	7	0·44	12	0·75
1955	16,623	....	....	....	....	1	0·06	13	0·78	14	0·84
1956	16,916	....	....	....	....	2	0·12	7	0·41	9	0·53
1957	16,924	....	....	....	....	3	0·18	8	0·47	11	0·65
1958	16,731	....	....	....	....	1	0·06	7	0·42	8	0·48
1959	17,111	....	....	....	....	1	0·06	4	0·23	5	0·29
1960	16,926	1	0·06	....	....	3	0·18	4	0·24	8	0·47
1961	17,078	....	....	....	....	2	0·12	5	0·29	7	0·41
1962	17,064	....	....	....	....	1	0·06	4	0·23	5	0·29
1963	17,290	....	....	....	....	1	0·06	3	0·17	4	0·23
1964	16,685	....	....	....	....	3	0·18	3	0·18	6	0·36
1965	16,186	....	....	....	....	1	0·06	2	0·12	3	0·19
1966	17,007	1	0·06	6	0·35	7	0·41
1967	18,023	2	0·11	2	0·11

(All Rates per thousand live births)

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Meat Inspection for the Year Ended 31st December, 1967

* Abnormalities

Type and Number of Animals Slaughtered		Carcases Condemned For—						Part Carcases Condemned For—						Organs Condemned For—						
		Tuber- enosis	Actino- mycosis	Piro- plas- mosis	Caseous Lymph Aden- itis	Para- typhoid	Trau- matic and Septic Condi- tions	Total Car- cases Con- demned	Actino- mycosis	Caseous Lymph Aden- itis	Tuber- enosis	Arth- ritis	Other Abnor- malities	Total Part Car- cases Con- demned	Actino- mycosis	Ehino- coeus Gran- ulosis	Pleuro- Pneu- monia	Tuber- eulosis	Other Abnor- malities	Total Organs Con- demned
Midland—																				
Cattle	...	64,599	32	...	1	33	1	144	3	305	330	29	360	...	36	3,919	4,335			
Calves	...	4,038	...	...	1	...	1	1	1	112	112	...	...	...	...	...	...	...	...
Sheep	...	669,063	...	...	29	30	86	115	1	92	161	6	107,531	107,531	...	...	...	...	107,531	107,536
Pigs	...	87,101	14	...	5	...	115	168	...	549	968	2,126	2,244	2,244	2,244	...	...	...	...	2,248
Robbs Jetty—																				
Cattle	...	22,749	15	...	...	21	8	44	4	843	...	9	6	23	881	80	36	...	4	1,432
Calves	...	22,749	15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Sheep	...	248,580	...	...	2	...	847	50	2	465	1,407	...	40	451	...	47	...	...	24,267	24,314
Pigs	...	14,334	2	...	...	...	...	...	1	11	65	...	...	...	1	...	...	...	...	1,892
Watsons—																				
Pigs	...	86,072	39	...	...	48	6	...	...	93	...	...	...	...	5	975	850	1,830	...	1,200
Kalgoorlie—																				
Cattle	...	1,573	...	...	...	...	...	...	1	1	1	...	...	...	...	8	...	...	...	98
Calves	...	69	...	...	...	...	...	...	...	15	35	...	...	...	...	...	...	...	...	90
Sheep	...	27,574	...	...	1	...	1	...	...	...	3	...	...	...	...	77	...	...	...	109
Pigs	...	2,287	1	...	...	...	...	...	...	...	...	...	...	...	...	27	...	...	...	1,467
Country Districts and Metropolitan Markets *																				
Cattle	...	41,887	27	...	1	...	...	...	15	50	141	15	104	140	11	10	158	99	...	3
Calves	...	4,760	...	...	...	...	...	...	...	73	...	...	...	...	...	3	3	...	...	602
Sheep	...	334,860	...	...	33	...	...	...	...	40	22	...	...	...	...	...	...	...	...	862
Pigs	...	18,085	...	...	...	...	...	...	...	48	48	...	...	...	...	...	...	...	...	1

Grand Totals—
Cattle 130,808
Calves 8,867
Sheep 1,280,977
Pigs 207,879

* Country Districts Included—
Busselton, Collie, Capel, Dardanup, Donnybrook, Esperance, Geraldton, Harvey, Katanning, Mandurah, Manjimup, Merredin, Narrogin, Northam, Plantagenet, Upper Blackwood, Wagin, Waroona, York.

Appendix XXII

Revenue and Expenditure for the Year 1967

	<i>Revenue</i>	\$	\$
Laboratory Fees			331,981
Branding Fees—			
Fish	3,366		
Meat	101,909	105,275	
Septic Tank Fees			45,611
Dental Fees—North-West Clinics			29,639
Child Health Contributions etc.			17,633
Derby Leprosarium—Maintenance Fees, Commonwealth Benefits etc.			106,018
North-West Health Inspector Schemes			3,747
Nurses' Registration Board Examination and Registration Fees			9,317
Public Buildings Inspection Fees			3,615
Private Hospitals' Licences			2,346
Poisons Licences			3,479
Perth Medical Officers' Fees			4,587
Miscellaneous			40,577
Tuberculosis—			
Commonwealth Capital Recoups			
Commonwealth Maintenance Recoups			632,168
Other			16,823
Administration Charges etc.			57,475
			<hr style="border-top: 1px solid black;"/> \$1,410,291
	<i>Expenditure</i>		
Salaries and Wages			1,912,135
Laboratory Services			303,494
Child Health Services			61,091
Schools Medical Services			15,556
Schools Dental Services—			
Generally	30,209		
North-West Clinics	32,200		
Subsidy Perth Dental Hospital Mobile Units (including Aero)	30,013		
Bursaries	10,037	102,459	
Tuberculosis—			
Miscellaneous	193,360		
Recoup to Sir Charles Gairdner Hospital	419,961	613,321	
Leprosy			180,467
Poliomyelitis			27,229
Venereal Diseases			12,645
Ophthalmic Survey			3,968
Medical and Nutritional Survey of Natives			3,422
North-West Health Inspector Schemes			6,334
Nurses' Registration Board			7,027
Physiotherapy and Speech Therapy Bursaries			4,696
Clean Air Act and Poison Committee Fees			1,121
Clean Air Act—Equipment			1,123
Clean Air Act—Incidentals			1,854
Septic Tank Inspection Fees—Refunds			18,614
Sanitation of Government Buildings			18,920
Printing			26,910
Miscellaneous			105,379
			<hr style="border-top: 1px solid black;"/> \$3,427,765

